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THE

Lloyd Roberts Memorial Lecture

[SUMMARY]

ON

THE CANCER PROBLEM.

Delivered at the Manchester Royal Infirmary on Nov. 9th, 1926,

BY W. E. GYE, M.D. EDIN.,

PATHOLOGIST, MEDICAL RESEARCH COUNCIL'S FARM LABORATORIES, MILL HILL.

THE subject which I have chosen for the lecture is not entirely within the special field of medicine in which Lloyd Roberts was an acknowledged master, but my hope is that what I have to say will be of sufficient interest to make the lecture worthy of the occasion.

I shall begin by indicating at once my general viewpoint on the subject of cancer, and I cannot do better than quote a few words from the introductory note of the First Scientific Report of the Imperial Cancer Research Fund (1904):—

"The combined histological and clinical observations of the last 50 years have established the malignant new growths as a natural group related to each other by fundamental common attributes. The explanation of those common fundamental characters is bound up with the mode of origin of malignant new growths, and is the problem awaiting solution, to be followed by the specific explanation of individual variations as its natural corollary."

I do not know how far this would meet with general approval. There are some very distinguished pathologists who take the view that there is no common cause of the fundamental characters of new growths; to such the search for a cause of the disease is an irrational pursuit. This view I regard as simply obscurantist and so, perforce, I leave it to time and the progress of knowledge to decide the issue.

My task is to tell briefly the essential story of the attempts which have been made to solve the problem set out in the quotation above. Naturally I shall advocate my own views of the solution of the problem, but I am more anxious to show—and if I fail, the fault lies with me and not with the facts—that at least the problem has been defined and brought to a practical stage by the immense efforts of experimental pathologists during the last 25 years.

EARLY RECORDS OF EXPERIMENTAL CANCER.

The earliest record of cancer experiments goes back to 1775 when Peyrilhe attempted to transfer a human breast cancer to a dog. The experiment was a failure. It has been repeated, with variations, over and over again by numerous observers—by Dupuytren, by Langenbeck (1840), Lebert and Follin, Duplay and Cazin, &c.—and invariably without success. Roux and Metchnikoff, and also Jobling, have attempted to transfer human tumours to anthropoid apes and failed. All this early work has shown the impossibility of transferring human tumours to the lower animals. In 1889 Hanau described the first successful transplantation of a carcinoma within the same species. The tumour was of a rat and in structure was a squamous cell carcinoma. It was transplanted into two other rats and formed small nodules in both. Pfeiffer (1890) was successful in transferring a melanotic carcinoma of a mouse to other mice. v. Eiselsberg (1890) successfully transplanted a spindle cell sarcoma of a rat to another rat. Morau (1891) was the first, by the method of transplantation, to cultivate a tumour. He was able to maintain a carcinoma of a mouse for 17 generations over a period of three years by the inoculation of fragments of the tumour into other mice. Firket (1882) and Velich (1898) were successful in transplanting a spindle cell sarcoma and a subperiosteal sarcoma of the rat respectively.

These observations attracted but little attention, and it was not until Jensen, Loeb, and Borrel had turned their attention to them that the significance of such work began to be appreciated. The present era of experimental cancer research may be said to date from the publication of Jensen's paper in 1902. His work, which was carried out with a carcinoma of a mouse, confirmed the observations of the previous experimenters already mentioned, in showing that a malignant tumour can be transmitted indefinitely within the species in which the tumour arises. Further, Jensen was unable to find micro-organisms in the transplanted tumours, and described experiments in which was tested the resistance of the cancer cell to different agents. During the same period Loeb studied a cystic sarcoma of the thyroid of the rat and obtained results essentially similar to those obtained by Jensen. Borrel, working with a mouse carcinoma, added further confirmation.

UNIVERSALITY OF CANCER IN MAN AND ANIMALS.

It will have been observed that the animals used by the experimenters mentioned were rats and mice, and the question now arose as to the occurrence of true new growths in other species. In the First Scientific Report of the Imperial Cancer Research Fund a list is given of the animal tumours examined in the laboratories of the Fund during the year 1903. Tumours of the most varied histological kinds, sarcomata and carcinomata, of the following animals are mentioned: cow, dog, horse, sheep, pig, mouse, cat, hen, Indian parakeet, giant salamander, cod, gurnard, and trout. Since that time observations of pathologists throughout the world have established definitely the fact that new growths occur commonly in all the lower animals, both domesticated and wild. Cancer is not therefore a purely human disease and any explanation of cancer in man must also explain the phenomena presented by cancer in the lower animals. These observations are uncontested and are of fundamental importance; they rule out of account the all too frequent pronouncements that cancer is a disease of civilisation and can be abolished by a return to a "natural" mode of living—whatever that may mean.

In the literature of 20 years ago one may find papers in which doubt was thrown on the neoplastic nature of animal tumours, but the question has now been most thoroughly studied, and the opinion among those most competent to judge is that the animal tumours are true new growths. It is therefore no longer necessary to discuss the point at any length. It is sufficient to say that in mode of origin, in age-incidence, in clinical course, in mode of growth and infiltrative spread, and in the formation of metastases there are no differences between tumours of man and of animals. The same range of tumours, benign and malignant, is met with in animals, and it is with this material that the greater part of experimental studies have been carried on.

THE IMPLANTATION OF TUMOURS.

The method by which a tumour is transferred from one animal to another consists in the implantation, usually subcutaneously, of a fragment of the tumour by means of a trocar or a syringe. From the implanted fragment a new tumour arises. Is the new tumour produced by infecting the cells of the host or does it arise by multiplication of the cells implanted? This question was studied by Jensen by the following technique. A series of animals—mice—was inoculated, in the manner indicated, with a mouse carcinoma, and at regular intervals one of the inoculated mice was killed, the whole of the graft and surrounding tissues fixed and cut in serial sections. In this way the fate of the implanted cells could be followed. Jensen showed decisively for a carcinoma—and his results have been confirmed by numerous observers—that the daughter tumour is derived entirely from the cells of the implanted graft. The central portion of the graft dies but the peripheral cells live; the fate of the

implanted stroma of the graft is difficult to follow, but a new stroma is provided by the host and it is this which nourishes the rim of neoplastic cells of the implanted fragment. The process, then, is a true transplantation and not an infection. Loeb who, studied the same problem with a rat sarcoma was unable to come to a decided opinion. He inclined to the belief that the new tumour was derived partly from the malignant cells inoculated and partly by a process of infection, from the connective tissues of the host. This difference in finding, however, may be merely one of technique and depending upon the difficulty of recognising a malignant from a normal connective tissue cell. Wherever the cells of the implanted tumour are easily distinguished from the cells of the area in which the fragment is placed, the question at issue may be determined by early-stage examinations. The general result of an immense amount of investigation of this character has been to show that the inoculations of tumours are true transplantations, that the daughter tumours are derived from the cells of the original new growths, and that the inoculated animals merely act as a medium in which the cells proliferate. By losing sight of these fundamental facts and by regarding transplanted tumours as *new* growths cancer research has often been led into blind alleys.

Specificity of the Cancer Cell.

The failure of the earliest investigators of cancer to transfer the human disease to lower animals has been mentioned already. This failure probably played a large part in forming the opinion that cancer is essentially a human disease. But it was quickly shown by experimental research that the tumours of animals are transplantable only within the species in which they occur. Thus a dog tumour cannot be propagated in a cat or a cat tumour in a dog. In the light of the discoveries of experimental histologists this is easily understood. It has been shown that inoculations of tumours are transplantations and therefore it could not be expected that the cells of a dog, for example, would grow indefinitely in cats or any other species of animal than the dog. The cell of an animal carries the species specificity. There have been certain observations made which would appear to invalidate this conclusion. Murphy discovered that mammalian tumours can be grown in a developing chick embryo. This discovery has been confirmed by many observers, including myself. From a minute fragment of a mouse carcinoma a considerable amount of growth can be obtained, and the astonishing picture is obtained of mouse epithelial tissue growing rapidly around a stroma provided by the chick embryo, new blood-vessels in which course nucleated red cells penetrating the mass of growth.

The same phenomenon of heteroplastic growth can be obtained in mammals by inoculating a mouse sarcoma into new-born rats. The cells proliferate and form a large tumour which can again be transplanted into new-born rats. In this way it is possible to maintain a mouse sarcoma for several generations in rats. But such work has no real bearing on the cancer problem. The implanted cells *remain mouse cells* and the maintenance of the tumour for a few weeks or months in a series of new-born rats is merely a laboratory trick which leaves the main problem unaffected. Since daughter tumours are derived from the implanted tumour cells it follows that living cells must be inoculated in order to obtain a second tumour. With epithelial tissues this is obvious indeed; inoculations are usually made subcutaneously into the connective tissues and the formation of an epithelial daughter tumour could not be expected to occur from infection of connective tissue cells. It is, however, an experimental fact that when the cells of a tumour are killed, whether by heat or by drying, by means of antiseptics or by mechanical disintegration, the mass of dead material no longer possesses the power of giving rise to a tumour when it is inoculated into a suitable animal. Thus, coincident with the death of the tumour cell there disappears the power of inducing a daughter tumour. The fact fits exactly with the logical deductions from the histological analysis of the changes accompanying the processes of transplantation.

The Cancer Cell a Parasite.

Such beautiful interlocking of fact and deduction served to strengthen the already strong conviction that the tumour cell is itself, as it were, the parasite. Nothing, apparently, is separable from the malignant cell which can induce the formation of a new tumour, and the general opinion has been formed, and is now held almost as a dogma, that the malignant cell is one which, under the influence of many possible inciting causes, has assumed a character or quality which enables it to grow and divide steadily and persistently beyond the needs of the rest of the body. According to this view, the cell is a parasite itself. The position is most clearly indicated by the following facts. It is now possible by following the brilliant work of Yamagiwa and Ichikawa to induce tumours in rats and mice by repeated applications of tar to the skin or subcutaneous tissues. The tumours thus produced are typical new growths and behave in every respect like spontaneous tumours which are caused in some way which we do not yet understand. A tar tumour of a mouse—carcinoma or sarcoma—can be transferred by transplantation to other mice, but living cells are necessary for success. It cannot be successfully transplanted to a rat or to any other species of animal. It is as much an individual mouse tissue as a mouse is an individual mouse. In the same way a rat tar tumour can be transplanted successfully only to other rats and only by the inoculation of living cells. We thus arrive at the interesting position that one and the same irritant acting upon two species of animals will induce new growths in each species, but the new growth in each case is individual and particular to its own species. Clearly the extrinsic agent, the tar, has induced an intrinsic change in the cell. It is thus easy to understand why a microbic hypothesis of the origin of tumours is met with scepticism and indeed contempt. It would be strange were it otherwise. Nevertheless, I believe that these apparently conclusive facts merely conceal the truth.

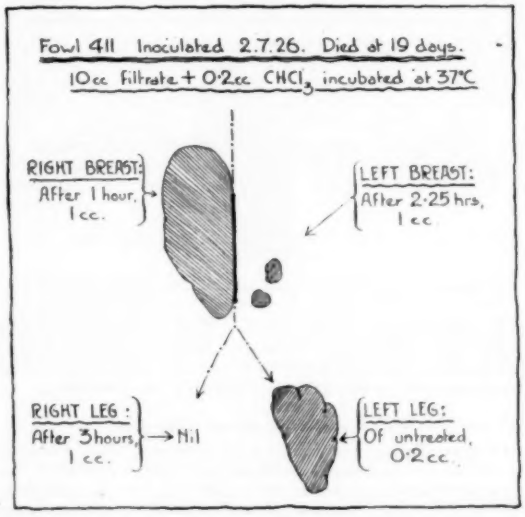
The Rous Fowl Tumour.

And now I come to the exceptions in all this mass of tumours. I refer to the well-known fowl tumours described by Peyton Rous. For the purpose of simplification I shall describe and discuss only one of these tumours, the first to be discovered and the one which is in the hands of pathologists all over the world. It is a spindle cell sarcoma, of primitive type, which occurred spontaneously in a Plymouth rock variety of the domestic fowl. The tumour was first described in 1910 when it was shown to be transplantable in the usual way but exhibiting an unusual degree of specificity for the variety of bird in which it originated. Indeed, the early transplantations were successful only in blood relations of the fowl which bore the spontaneous tumour. Now, after many years of artificial transplantation, the tumour grows in almost any variety of fowl but, like mammalian tumours, it retains its species specificity strictly. That is to say, it will not grow in pigeons, ducks, or any other species of bird, or in any mammal. Now this tumour was found by Peyton Rous to differ from all other tumours examined up to that time in being transferable to fowls not only by means of living cells but also by means of dried tumour tissue or by means of cell-free filtrates. The cell-free filtrates, therefore, contain the tumour's "cause." And, most surprising fact of all, the filtrate is infective only for fowls and causes the reproduction invariably of exactly the same kind of tumour—a spindle cell sarcoma. Thus the agent derived from the tumour cells has the power of exciting the formation again of a new tumour by transforming the normal connective tissue cell of the fowl into malignant cells, and this power is exerted only in one species. It is easy

to believe in the specificity of animal cells, but here apparently the specificity is freed from the cells and is obtained in solution—or at least it passes through a filter.

Of such tumours half a dozen or so have been described; but it does not matter much whether

CHART 1.


Fowl 411 Inoculated 2.7.26. Died at 19 days.
10cc filtrate + 0·2cc CHCl3 incubated at 37°C
RIGHT BREAST: After 1 hour, 1 cc.
LEFT BREAST: After 2·25 hrs, 1 cc
RIGHT LEG: After 3 hours, 1 cc. → Nil
LEFT LEG: Of untreated, 0·2 cc.

the number be half a dozen or half a hundred; the problem to be faced is the same and is challenging to all of us. Before trying to make clear what I conceive to be the problem I will state and discuss briefly the essential facts upon which there is general agreement.

The Rous Tumour a True New Growth.

First, the tumour is a true new growth as judged by the most rigid standards; secondly, filtrates through candles which hold back very small bacteria are able to induce sarcoma formation; and thirdly, some of the properties of the filterable agent are those which we usually associate with living organisms.

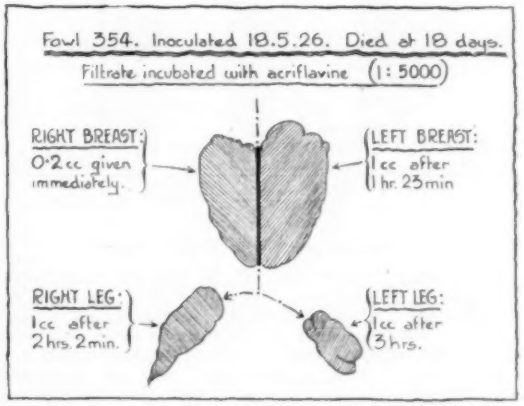
The general reaction to the discovery of these tumours was one of surprise that such a tumour should exist, followed by a half-hearted denial of the neoplastic nature of the growth. To-day most pathologists who have studied the tumour agree as to its neoplastic nature. There exists, however, an unwillingness to consider seriously the possibility of the filterable agent being an ultra-microscopic microbe such as we believe exists in certain animal diseases. Some of the more absurd explanations of the peculiarity of this tumour I will simply mention. It has been suggested that the filtrate of the tumour contains an ultramicroscopic cell which, when injected into the muscle of a fowl, enlarges and becomes a normal cell from which the new tumour forms. A modification of this view which has been put forward is that the active filtrate contains a part of the cell from which the normal cell can again regenerate. Such views, I hope, need no reply. They are stated merely to indicate the extremes to which men will go to explain away a fact which runs counter to a strongly held opinion.

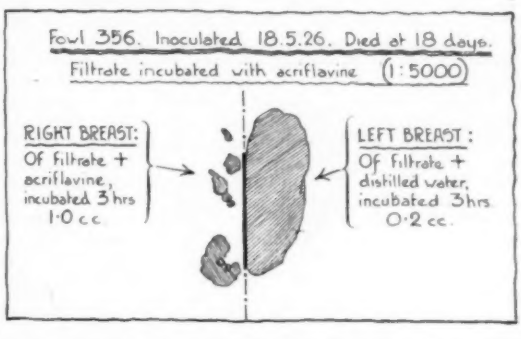
Rous and his collaborators in their long researches into the filterable tumours came to the opinion that the balance of evidence was in favour of the agent being a living, filterable micro-organism. Now what is the evidence that such things exist at all? If we take the classical example, and the first discovered, of an animal disease believed to be caused by a filterable virus we shall consider foot-and-mouth disease.

The current belief that foot-and-mouth disease is caused by a filterable virus is founded upon the following evidence. When the vesicular fluid of a lesion in this disease is diluted and filtered through a good candle, and the filtrate injected into a normal animal, this animal acquires the typical signs and symptoms of the disease. The vesicular fluid obtained from the second case may again be diluted and filtered, and once again the filtrate will reproduce foot-and-mouth disease; and so on ad infinitum. The filtrate when examined by ordinary microscopic and cultural methods is sterile, but since the causal agent reproduces itself indefinitely in the bodies of the inoculated animals it must be a living thing and it is, as we have seen, of ultramicroscopic size. Upon this evidence almost all bacteriologists believe that the cause of foot-and-mouth disease is an ultramicroscopic microbe. The evidence produced by Peyton Rous with regard to the filterable tumours was of the same kind and quality and is now more extensive. But opinion against a microbic cause of tumours is strong and few are prepared to accept for tumours conclusions which, on similar evidence, are unquestioned in other fields of medicine.

Let me now state the problem which is before all of us. Thousands of tumours of men and animals have been studied. Large numbers have been cultivated by transplantations. A considerable number of tumours have been induced de novo by means of chemical and other irritants and have been carefully studied. Almost all attempts to find an extrinsic cause—or a cause separable from the cells

CHART 2.


Fowl 354. Inoculated 18.5.26. Died at 18 days.
Filtrate incubated with acriflavine (1:5000)
RIGHT BREAST: 0·2 cc given immediately.
LEFT BREAST: 1 cc after 1 hr. 23 min
RIGHT LEG: 1 cc after 2 hrs. 2 min.
LEFT LEG: 1 cc after 3 hrs.

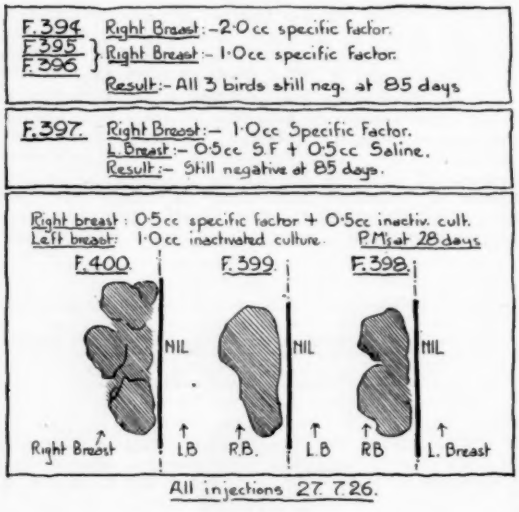

Fowl 356. Inoculated 18.5.26. Died at 18 days.
Filtrate incubated with acriflavine (1:5000)
RIGHT BREAST: Of filtrate + acriflavine, incubated 3 hrs 1·0 cc
LEFT BREAST: Of filtrate + distilled water, incubated 3 hrs 0·2 cc.

—have failed. But to about half a dozen tumours, of various histological kinds, a cause, a filterable virus, separable from cells has been found. How shall we look upon this astonishing difference? We may regard the filterable tumours as a disease sui generis unrelated to other tumours; in this way we must suppose that a filterable virus plays a part in the causation of certain tumours which is comparable to the part played by tar or soot in others. This attitude to the problem has been general, but I think that it is a mere evasion of a very real difficulty. The problem exposed by the work of

Rous does not consist solely in the isolation and cultivation of a virus. The true explanation of these tumours must in the first place decide whether or not a virus is present; and in the second place, equally important from the point of view of the cancer problem, must give us some understanding of the extraordinary specific character of active filtrates.

For my part I agree most emphatically with Rous, Murphy, and Tytler that "the findings with the chicken tumours largely demolish the theoretical basis on which objections to an extrinsic cause for cancer have been built up." But can these positive findings of Rous be reconciled with the negative results of similar experiments made with the majority of other tumours? I think they can.

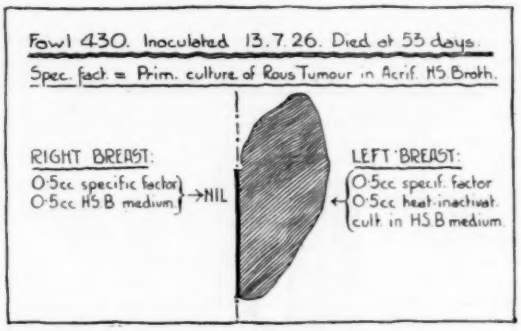
CHART 3.



The Filterability of the Rous Tumour.

It has already been pointed out that the exceptional character of the tumour lies in the fact that cell-free extracts are able to cause the formation of a new tumour. This property of the tumour must therefore be carefully studied and we must know how far it is a fixed and constant property. It has generally been looked upon as constant, and the tumour has on this account been set in sharp contrast with mammalian tumours. This is not in accordance with the facts; they are not quite so simple. Peyton Rous remarked in one of his papers dealing with the filterability of his tumour that sometimes, and under the best conditions, cell-free filtrates are unaccountably innocuous. That, I am sure, has been the experience of all investigators who have worked for any length of time with the tumour. In my experience it has been unusual, for example, to obtain a potent filtrate from a tumour which has been induced by the inoculation of dried tumour tissue, or from a tumour which has been caused by the inoculation of filtrates damaged by heat. But when failure to obtain potent filtrates is an irregular thing the most obvious explanation is that the failure is caused by some technical difficulty. Filtration is not a simple, regular process and it is easy to understand irregular qualities of filtrates. But it has now been shown that technical difficulties cannot fully explain such failures. Dr. Andrews and myself have described how a Rous tumour lost its property of filterability and how this property remained absent for more than five months and then suddenly reappeared. During this long period the tumour was transplantable only by means of living cells—that is, it behaved like the recognised tumours of mammals. Clearly, then, this property of filterability is not fixed; all we can say is that generally a filtrate of the tumour is active—sometimes feebly, sometimes intensely; often it is quite inert. And since it has generally been accepted that a potent cell-free filtrate contains the tumour's cause, are we then to say that sometimes the cause is present in the filtrates

CHART 4.

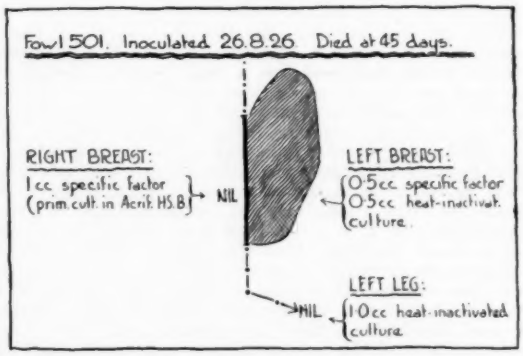

Fowl 430. Inoculated 13.7.26. Died at 53 days.
Spec. fact. = Prim. culture of Rous Tumour in Acrif. HS Broth.
RIGHT BREAST:
0·5cc specific factor
0·5cc HS B medium
NIL
LEFT BREAST:
0·5cc specif. factor
0·5cc heat-inactivat. cult. in HS B medium.

and sometimes it is not? The solution of this apparently ridiculous dilemma will be shown later; at present I merely wish to point out that sometimes the tumour's cause gives no sign of its presence.

The Effect of Heat on Filtrates.

It was shown by Rous and Murphy that tumour extracts are always robbed of their activity by exposure to a temperature of 55° C. for 15 minutes. This statement I can confirm completely. It has been tested very carefully and the method employed is as follows. Not more than 3 c.cm. of the tumour extract is sealed up in a *thin-walled*, hard glass test-tube which is then attached to the bulb of a standard thermometer and completely immersed in a water-bath kept at 55° C. The thermometer and attached tube are shaken gently during the period of heating. Tested in this way, tumour extracts, whatever their initial potency, are invariably inactivated. Rous and Murphy regarded this result

CHART 5.



as evidence that the causative agent of the tumour had been destroyed; and, of course, it looks very like it. Whatever the agent is that is destroyed in such a short time at 55° C. it is evidently very sensitive to heat, and judging by the thermal death points of other viruses, it is not likely to be a virus. This view is supported by a study of the effect of lower temperatures than 55° C. upon a series of filtrates of tumours. A filtrate, usually through a Mandler candle, was made from all the routine tumours obtained during a period of more than six months—in all more than 40 tumours. Each filtrate was tested at temperatures from 45° to 55° C., variations being made from time to time. During the period chosen, the tumour was not very malignant and as

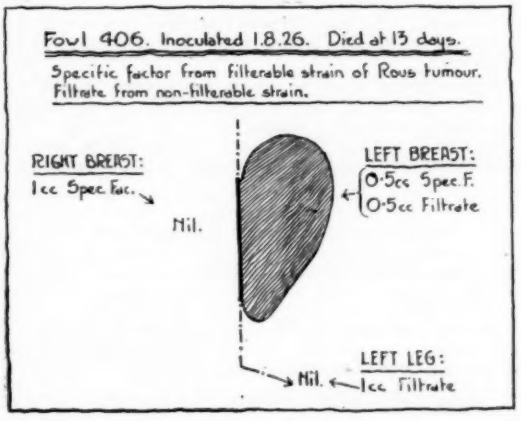
malignancy and activity of filtrates run parallel with one another, the filtrates were not very potent. In a few tests made it was found that 0·5 c.cm. of Mandler filtrate was barely sufficient to induce a new tumour; 2 c.cm. was in each case adequate. All the samples of such filtrates were inactivated by exposure to 55° C. for 15 minutes; often 50° C., and sometimes 45° C. for 15 minutes was sufficient. When suddenly the tumour became exceedingly malignant, metastasising freely in liver, lungs, spleen, and elsewhere, and the filtrate became exceedingly active, inducing tumours in doses of 0·001 c.cm., then it was found that 54° C. for 15 minutes was insufficient to destroy all activity—the activity of the filtrate being merely reduced—but that exposure to 55° C. for 15 minutes was effective.

It is evident from this experience that the substance in the filtrate which is sensitive to heat is variable in amount or in quality in filtrates from different tumours.

EFFECTS OF ANTISEPTICS UPON TUMOUR EXTRACTS.

One of the reasons given by Rous and Murphy for their belief that the filterable agent may be a virus was that antiseptics destroy the agent. It is only fair to state that Dr. Murphy has since changed his mind; he now thinks that it is unnecessary to assume a virus.

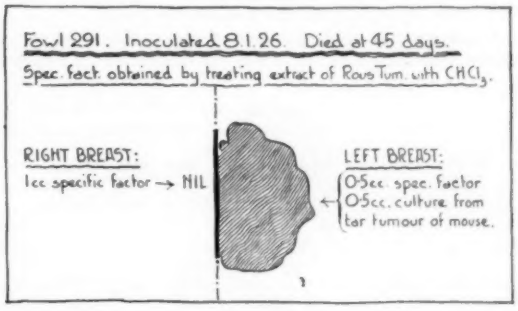
CHART 6.



His opinion of 1912 seems to me to be sounder than his opinion of 1926. Carbolic acid, corrosive sublimate, toluene, chloroform and ether, hydrogen peroxide, formalin, acriflavine, and hydrocyanic acid are some of the antiseptics which have been tested and they are all effective, each in its own way, in abolishing the activity of tumour extracts. I shall describe briefly the effects of two only of these substances—namely, chloroform and acriflavine.

Chloroform acts very rapidly at incubator temperature. This is shown very clearly in Chart 1. which represents the effect of 0·2 c.cm. chloroform on 10 c.cm. of clear, cell-free, sand filtrate of a very malignant Rous sarcoma. The mixture of filtrate and chloroform was incubated in a large, hard glass tube in a water-bath at 37° C. After incubation for one hour a sample was removed, the chloroform pumped off, and 1 c.cm. then inoculated intramuscularly into the right breast of Bird 411; after two and a quarter hours a second sample was inoculated in a dose of 1 c.cm. into the left breast of the same bird; and after three hours 1 c.cm. was inoculated into the right leg of the bird. The control in this experiment was provided by incubating 10 c.cm. of the filtrate, contained in a hard glass tube, for three hours in the same water-bath; of this incubated extract 0·2 c.cm. was inoculated into the left leg of Bird 411. It is shown by this experiment that in two and a quarter hours the activity of the filtrate has been enormously diminished by the chloroform, in three hours abolished. But since the fowl died in 19 days it might be argued that there was not sufficient time allowed for the dose of filtrate treated with chloroform for the full three hours to manifest its activity. To provide against such a source of error a second fowl was inoculated with 2 c.cm. of such extract: in four months it has not developed a tumour. Thus chloroform acts very rapidly. This, however, applies

CHART 7.


Fowl 291. Inoculated 8.1.26. Died at 45 days.
Spec. fact. obtained by treating extract of Rous Tum. with CHCl3.
RIGHT BREAST:
1cc specific factor → NIL
LEFT BREAST:
0·5cc. spec. factor
0·5cc. culture from
tar tumour of mouse.

only to the ordinary impure chloroform used for common purposes in laboratories. When pure chloroform is used the action is much slower. I am indebted to Dr. Howard Mueller, of Harvard, for the intimation that this might be so.

Acriflavine acts slowly. The experiment represented by Chart 2 illustrates this very well. It will be seen from this that 1 in 5000 acriflavine is unable in three hours to abolish the activity of an extract of a tumour. When such experiments are carried on for longer times—e.g., six hours—it is found that the activity is further diminished but not entirely abolished. In order to inactivate a filtrate it is necessary to incubate the mixture overnight and this often introduces a complication; simple incubation at 37° C. for 18 hours frequently robs a filtrate of its powers to induce tumour formation. In order, therefore, to utilise the action of acriflavine in experiments of an analytical character it is necessary to devise other methods, the details of which are omitted here for the sake of clarity.[1]

TWO FACTORS: BOTH NECESSARY FOR CELL INFECTION.

We know that filtrates of the Rous tumour can be inactivated by heat and by antiseptics. By means of experiments such as the following (Chart 3) it can be shown that the element destroyed by heat is not the same as that destroyed by acriflavine. The experiment illustrated shows that a tumour extract treated with acriflavine was quite inactive; an extract of the same tumour heated to 55°–56° C. for 18 minutes was also inactive. The two inactive fluids when mixed together acquired the power of inducing tumour formation.

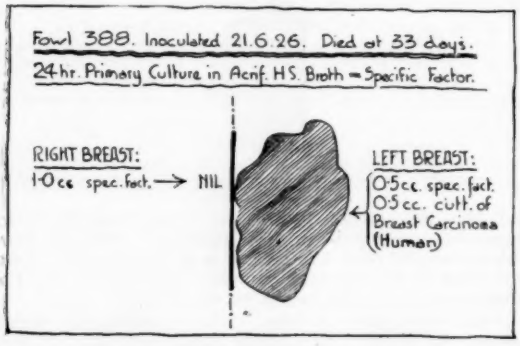
The only criticism which can be passed upon experiments of this kind is that the chickens inoculated with acriflavine treated extract happen to be naturally resistant, whereas the others were sensitive. This criticism, however, is not sound. The percentage of resistant birds cannot be determined absolutely, but it is, in any case, very small. Moreover, resistance is a graded quality. When the infective fluid is intensely active it is very rare to find a chicken resistant to its action. Only when the fluids which are inoculated are on the border-line of infectivity does one reveal differences in sensitiveness among any batch of chickens. The criticism, in any case, cannot apply to the next series of experiments. which are illustrated in Charts 4 and 5.

[1] The details and protocols of these researches will appear in a series of papers in the British Journal of Experimental Pathology.

In these experiments the same bird is used as control to the experiment. In the first experiment (Chart 4), the dose of acriflavine treated tumour extract is the same in both breasts; the only difference between the two sides is that in the right breast the diluent is horse serum broth medium, while in the left breast it is heat inactivated extract of tumour. The quantities in such experiments as this are measured with the most scrupulous exactitude. In the experiments represented by Chart 5, the controls, both of heat inactivated and antiseptic inactivated extracts are included on the same bird. Similar experiments, with similar results, have been made with chloroform and with hydrocyanic acid as antiseptics.

From results such as these I am satisfied that the production of a tumour with cell-free filtrates depends

CHART 8.


Fowl 388. Inoculated 21.6.26. Died at 33 days.
24 hr. Primary Culture in Acinf. HS. Broth = Specific Factor.
RIGHT BREAST:
1·0 cc spec. fact. → NIL
LEFT BREAST:
0·5 cc. spec. fact.
0·5 cc. cult. of Breast Carcinoma (Human)

upon the conjoint action of two elements of the filtrate. One of these is rendered inactive by acriflavine or other antiseptic and is therefore presumably a micro-organism; the other is readily inactivated by heat. As we have seen, it would appear probable that the agent which is destroyed by heat is variable in quantity (or in quality) in filtrates from different tumours. Chart 6, which illustrates eight similar experiments, shows that innocuous filtrates (i.e., filtrates from a "non-filterable" Rous tumour) have the same property of reactivating acriflavine inactivated extracts as have extracts which have been heated to 55° C. for 15 minutes. It follows that inert filtrates are simply filtrates which contain none, or an insufficient amount, of this heat-sensitive but absolutely essential factor. This factor, which I have named the "specific factor," for reasons which will appear later, may be present in variable amount, and it is only because of its activity that the presence of a virus can be shown in the Rous sarcoma. When it is absent the Rous sarcoma, like the average bird and mammalian tumours, cannot reveal its "cause." The peculiarity of the Rous tumour is that it manufactures in varying degree this accessory thermolabile substance.

It is evident from these experiments that the agent which is destroyed by antiseptics (the virus) is unable, acting alone, to induce sarcoma formation. This fact appears to me to be very simple. It has its analogies in general bacteriology where the phenomena are most widely known and appreciated. But the fact, when established in research connected with the subject of cancer, is apparently regarded as a diabolical mystification of a plan and straightforward problem. It is but right to state here that Prof. Borrel, the pioneer of experimental cancer research, has for 20 years held the opinion, on general grounds, that the essential cause of tumours is a virus which requires prolonged preparatory irritation of the tissues before its latent powers can be manifested.

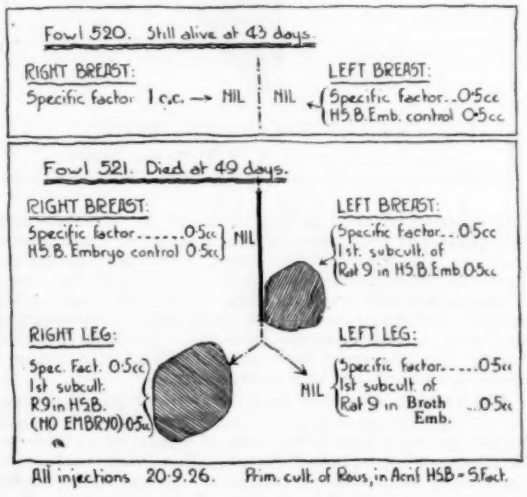
The use of the word "cause" in medicine is unfortunate and is always liable to misapprehension. What is generally understood by the word is, I assume, a factor which must be invariably present in the ætiology of a disease. We cannot, if this be the meaning understood, regard the specific factor as the cause of the Rous sarcoma because it is sometimes absent. The virus—i.e., the element which may be destroyed by an antiseptic—is, so far as my experiments show, always present in the tumour whether the tumour be very malignant or relatively benign. I regard the virus, therefore, as the cause of the sarcoma. Which of these two characters carries the specificity?

SUBSTITUTION EXPERIMENTS.

If an extract of the Rous fowl sarcoma be inactivated by heat and then there be added to it an extract of another tumour, the mixture does not induce sarcoma formation in the fowl or in the animal from which the second tumour was obtained. That is, a heat inactivated extract of the Rous sarcoma cannot be restored to activity by the addition of simple extract of a rat or mouse tumour. But when an extract of a Rous sarcoma is inactivated by means of an antiseptic or by centrifugation, the activity can be restored by the addition of extracts of some other tumours. Chart 7 shows this very clearly. In this experiment the fowl sarcoma filtrate was treated with chloroform, the chloroform removed, and 1 c.cm. of the filtrate was then injected into the right breast of a fowl. Into the left breast of the same animal a mixture of 0·5 c.cm. of this chloroform inactivated filtrate and 0·5 c.cm. of an extract of a tar tumour of the mouse was injected. A tumour grew in the left breast; the right breast remained quite negative. Chart 8 shows the same result for a human breast carcinoma.

Experiments such as these have been made with a large variety of tumours and with normal tissues. Among the tumours which have provided an agent which can replace that agent of the Rous sarcoma destroyed by antiseptics are carcinomata and

CHART 9.



sarcomata, both of man and animals. Normal tissues which have been tested are: embryonic tissues (chick, mouse, rat) more than 150 times; adult tissues of animals, including heart, lungs, muscle, brain, liver, and kidneys—and in one instance, normal human uterus. Not once has it been possible with extracts of such normal tissues to replace the agent destroyed by antiseptic in the fowl sarcoma extract.

My interpretation of such experiments is as follows. In the experiment represented by Chart 8, for example, acriflavine has destroyed in the Rous

tumour extract a micro-organism; this interpretation is in accordance with the well-known antiseptic action of acriflavine. The extract of mammary carcinoma has, as I conceive it, provided a fresh supply of organisms which are able, in virtue of the presence of a sufficient amount of accessory factor of the fowl tumour, to infect the cells of the fowl inoculated.

These experiments show very clearly that the specificity of the Rous tumour extract is carried by the heat-labile agent which has, for this reason, been called the "specific factor." It has already been pointed out that extracts of normal tissues do not provide the agent which reactivates antiseptic treated extracts of the Rous sarcoma. But certain tumours, one of which is a sarcoma of the mouse, have so far invariably failed also. This is one of the most puzzling facts yet met with and I have no explanation which accounts for it satisfactorily. The evidence that the agent which is extractable from many bird and mammalian tumours and which has the power of restoring activity to inactive extracts of the Rous tumour is a micro-organism is as follows: first, the agent is killed by antiseptics, and, secondly, it can be cultivated. The proof of cultivation is obtained by the method described in a recent publication—namely, by using as a medium serum broth to which is added a fragment of embryonic tissue. Chart 9 shows the method of experimentation adopted. Acriflavine treated extract of Rous sarcoma is prepared; to measured portions of this are added in series, (1) a sample of serum broth embryo culture medium, (2) a sample of a subculture in the same medium, and (3) samples of a subculture in different media. Quantities are measured precisely. The result of the experiment represented by Chart 9 shows that the agent from a rat carcinoma survived in horse serum broth embryo and in horse serum broth, but not in broth embryo; it was not present in the horse serum broth control-tube which has been incubated for the same period of time as the cultures. Continuing with subcultures in this way tumours have been obtained with remote—seventh—subcultures in media which contain embryo tissue. But there is a criticism which has been applied, and quite fairly, to these results. It is that possibly we are here dealing with a phenomenon similar to that discovered by Twort and now known as the "bacteriophage phenomenon." It is possible to argue that successive inoculations into tubes which contain living embryo induce repeatedly the production of the agent from the cells of the embryonic fragment. This is not impossible but it is very improbable. It must, of course, be settled before the last element of doubt has been removed.

CONCLUSIONS.

Does this new knowledge bring us any nearer to the solution of the problem set forth at the beginning of this lecture? And, further, is the answer compatible with the known facts of cancer structure and behaviour? It seems to me, after considering the problem very thoroughly—and I hope with a sound knowledge of the accepted facts—that in the first place there is no incompatibility between new and old "fact"; and in the second place it shows that there is an agent contained in tumours of diverse origin and of diverse structure which has the supremely important property of reactivating an extract of the Rous sarcoma which has been inactivated by means of an antiseptic. The tumours in this respect are therefore linked together in a way which had never before been suspected; they are indeed a natural group. The agent which is common to these and which links them together in a group, is killed by antiseptics and can be cultivated. Moreover, under special conditions it can be seen and photographed, as has been shown by my friend and colleague, Mr. Barnard. I am satisfied that the simplest explanation of these observations is the correct one—namely, that the agent is a living, filterable microbe and that it is the cause of new growths.

Bradshaw Lecture

ON THE

THEORY OF DIAGNOSIS.

Delivered before the Royal College of Physicians of London on Nov. 4th, 1926,

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PART II.*

THE full importance of the distinction between natural and conventional diagnosticians is only appreciated when medicine is studied in respect of the parallelism that Saucerotte said has ever existed between the history of medicine and that of philosophy—a parallelism that needs no explanation when we realise that, whether in medicine or philosophy, there are two routes by which the human mind has always sought to attain its goal. These routes—those of the sensualist or empirist, and of the Platonist or rationalist—are those followed respectively by the two schools of diagnosis—the natural, or descriptive, and the conventional, or academic—that I have tried to indicate. For the better estimation of our present position, two *points de repère* in the duplex history of medicine and philosophy may be taken: the first, the controversy between Coan and Cnidian in the the fifth century before Christ; the second, the rivalry between Hippocratists and Galenists during the sixteenth century afterwards.

COANS AND CNIDIANS.

It has been said by Boinet that the rival schools of Cos and Cnidus stand for "les deux grandes idées doctrinales qui reviennent sans cesse à travers les siècles après de longs détours et avec des fortunes diverses," and Daremberg, with equal justice, declared that in the Coan writings we find discussion of the organism and of disease; in the Cnidian scriptures that of organs and of diseases. That these differences are essentially *diagnostic* was implied by Littré when he said that the Coans studied the general state that the outcome might be foretold, whereas the Cnidians were more concerned with the diversity of diseases and the distinctions between them.

But it is from the few undisputed writings of Hippocrates the Great that we derive the clearest notion of the Coan diagnosis whereby, after full examination of all relevant detail, related phenomena were simply interpreted in the light of past experience, the resultant judgments being expressed descriptively yet concisely without the confusion arising from the hypostatisation of abstracts and the utraquistic use of names. The classical passage is that in the "First Epidemics," where, speaking of a certain epidemic prevalence, Hippocrates says that he framed his judgments or *diagnosed* by paying attention to what was common to every and particular to each case; to the patient, the prescriber, and the prescription; to the epidemic constitution generally, and in its local mood; to the habits of life and occupation of each patient; to his speech, conduct, silences, thoughts, sleep, wakefulness, and dreams—their content and incidence; to his pickings and scratchings, tears, stools, urine, spit, and vomit; to earlier and later forms of illness during the same prevalence; to critical or fatal determinations; to sweat, chill, rigor, hiccup, sneezing, breathing, belching; to passage of wind, silently or with noise; to bleedings; and to piles.

Here, in a fashion that shows at once the strength and the weakness of *natural* diagnosis, we are given an epitome of what the physician who takes cognisance of the epidemiological as well as the clinical relations

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of a fever must observe. That, to the Coan, judgments were particular for each case, and that general conditions such as fever, and local conditions such as peripneumonia, were mentioned descriptively without linguistic suggestion of attack by any entity or of participation in the "secondary substance" of some scholastic reality—much as when a French physician of to-day says his patient has "a pneumonia" or "a meningitis"—is shown when, in the last sentences of the "Prognostics," Hippocrates begs the reader not to regret the omission of the name of any particular disease, since it is by study of symptoms in each case rather than from accounts of named diseases that the desired knowledge is gotten. A similar diagnostic method is exhibited in the Hippocratic essay on "Wounds of the Head," and is generally employed by surgeons when dealing with injuries.

What we know concerning the Cnidian diagnosis comes in part from the Hippocratic essay upon "Regimen in Acute Diseases," and in part from Galen, in his "Commentary" thereon, and elsewhere. Just as the Coans saw the essential unity of all disease whilst admitting the multitudinous presentations thereof in accordance with personal and environmental singularities, so the Cnidians, in Adams' words, overstrained diagnosis to a system that divided and subdivided diseases into endless varieties or species. For the Cnidians, as for all *conventional* diagnosticians, the aim was not the assay of the patient's state, but the identification of his malady with a standardised ideal.

Since method in therapeusis waits always upon method in diagnosis, Hippocrates differed from the Cnidians, as he said, whenever they interpreted symptoms with a view to determining right treatment: the burden of the "Regimen" is that *he* sought to treat each patient individually and symptomatically; the Cnidians the disease, specifically and rationally. By the Coans every effort was made to "assist nature," to reintegrate the functional unity of the organism that Sigaud finds dissociated in all disease, and to "diagnose"—the translation is literal—

> "to diagnose the asthenias that occur during illness, whether caused by lack of food or other harm, by pain, or the severity of the malady . . . for through knowledge of such things comes safety: through ignorance thereof, death."

But the Cnidians employed those remedies which reason led the physician to deem efficacious in respect of the nominated disease. These differences in practice, however, like those in diagnostic method, flow naturally and consequently from the fundamental psychological differences between two schools, of which one conforms to the natural or direct method of thought and interpretation, and the other to the conventional or indirect and abstract habit. These are rather naïvely indicated by Neuberger when, in sentences that evade the real question, he blames the Cnidians for making "fictitious types of disease founded upon unessential characteristics" and the Coans for their "fusion of clinical entities both pathologically and etiologically distinct."

The cleavage is, indeed, that between those to whom types or universals are of no greater importance than their names, or are at most but shallowy imaginings, and those to whom even the names of such types are something more than mental conveniences, algebraical symbols, or book-keeping fictions, and are representative of *realities*, in a Platonic if not a material sense. Indeed, we are forced to agree with Galen when he said so wisely and so wittily, in his essay "Upon some Tenets of Hippocrates and Plato," that, in the greatest number of cases, cleavage of opinion comes from the failure to distinguish between the particular and the general, "such being the source of disagreement between physicians in respect of the use of barley-water"—a hit at the Coans and Cnidians, this—"and between philosophers concerning the virtues of the soul." Had he lived to-day, he would have said that this failure constitutes also an obstacle to the instruction of the public in matters of personal health, otherwise than in relation to personal diagnosis!

Incidentally, it is of interest that Taylor, who finds the most significant examples of the Platonic usage of the words *idea*, *eidos*, in just those parts of the Hippocratic collection now regarded as Cnidian, should also trace in the Cnidian writings the influence of that Pythagorean school that allied an early form of Platonism to a philosophy of numbers. To-day there are no more stubborn Cnidians than those statisticians who repose their strange belief in numbers upon a realism that allows them to fancy statistical combinations to be something else than patterns of symbols, and statistical results to possess a value that renders inquiry into the original data otiose, if not mischievous.

HIPPOCRATISTS AND GALENISTS.

If the difficulties between Cos and Cnidus, no less than those with which Galen was so greatly concerned between the empirics and the dogmatics, were indeed, as Littré says, a struggle between the fact and the generalisation, or the particular and the general; the essay "Upon some Tenets of Hippocrates and Plato," in which the question of the One and the Many is dealt with in all its obscure profundity, is remarkable as indicating not only Galen's ambition to act as conciliator in respect of the fundamental problem of diagnosis, but his partial breakaway from Coan medicine, and his increasing tendencies to Platonism, as when he declares that Hippocrates wrote confusedly in respect of *genera* and *species*.

His conventionalising tendency is again marked when he approves the saying of Erasistratus that to diagnose is to answer the question: Where and what is the disease? (8–14). So, too, when in the "Commentary" upon the "Regimen" he insists that he alone who knows the constitution of the sick *and* the nature of the disease will be able to devise rationally the remedy. Again, and above all, when, to the four Aristotelian causes—the formal, material, efficient, and final—he adds one more, the typical, or exemplary, by virtue of which the particular, or instance, conforms to the universal, or type. Implicit acceptance of the exemplary cause permeates all modern conventional diagnosis and justifies the notification to public authorities of cases of those diseases which, called into existence by decree from Whitehall, are, in the words of Galen himself, followed by the symptoms as is the substance by the shadow.

It is in virtue of this Platonism that Galen, in spite of his professed devotion to the memory of Hippocrates, became in the sixteenth century century throughout Europe, but notably at Paris, the eponymous head of that party which opposed itself to the less organised body of Hippocratist physicians when was renewed, at the turning point of modern history, the controversy that I have spoken of as that between Cos and Cnidus. If we may consider Guillaume de Baillou (1538–1616), to whom our epidemiologists (and Sydenham not least) owe all, to have been the greatest figure amongst the French Hippocratists, perhaps his master Fernel (1497–1558), who first measured a degree of the meridian, is to be reckoned the greatest of the Galenists. However much Fernel differed from Galen in detail, he, a conventionalist through and through, was never more Galenist than when he tried to shepherd the jarring sects within the fold of his Ramist philosophy and logic. For him a disease was an *affectus*, or *diathesis*, *contra naturam*, and with local or general incidence. Our contemporary systemisers betray his influence in every sentence that they write.

Those who read Baillou and Fernel must agree with Wickersheimer that Le Clerc's epigram, founding the Hippocratic system upon experience and the Galenical upon ratiocination, is absolutely true when applied to the Hippocratists and Galenists of the Renaissance, between whom the difference was less one of doctrine than of method. That is to say, it was one between natural diagnosis in terms of experience, and conventional diagnosis in terms of reasoning. The philosophical difference — fundamentally that which

separated Cos from Cnidus, empiric from dogmatic, and lately occupied some portion of our morning papers in the guise of a discussion at the Oxford meeting of the British Association concerning the nature of species—appears at this time as the aftermath of the mediæval dispute between nominalists and realists which, initiated by the questioned interpretation of a passage in Porphyry's "Isagoge," turned upon the formal query whether or no universals, or *genera* and *species*, have any existence otherwise than in our thoughts.

The scholastic realism that answered this question affirmatively, hypostatising general ideas and holding that in the universals alone is there substantial reality, while standing in line of descent from the early Platonism of Cnidian philosophy and medicine, and the late Platonism of Galen's philosophy and medicine, survives to-day in the obstinate creed of those who profess the belief in clinical entities against which the late Sir Clifford Allbutt fought so long, so ably, and so vigorously.

It carries with it the implication that such *species* as described diseases obey an ascertainable rational necessity and are more than subjective interpretations, being so determined by the nature of things as to be theoretically susceptible of categorical exhaustion by enumeration. Since, even in 1473, until shortly before the birth of Fernel, all professors of the University of Paris had been compelled to take oath to teach only this realism and to abjure all contrary doctrines, it is not difficult to understand the still dominant influence of Galenism in the Faculty of Medicine 50 years later.

The opposed view of the nominalists implied that the name of a universal is but a *flatus vocis*, corresponding to no *ens*, or entity, and that *species* and *genera* are mere names. Since the germs of nominalism are clear in all Coan writings, it is not surprising to find the works of Baillou permeated with the true spirit of the nominalist philosopher and natural diagnostician who seeks eagerly for experience and its synthesis but who distrusts all systemisation and all hypostatisation of abstractions. But, since the philosophical position of those who, at the time of the Renaissance, upheld the doctrines of the Trinity and of the Real Presence, even to extremity, was derived from scholastic realism, whilst nominalism was combated with so much bitterness because of its supposed inconsistency with these dogmas, we may truly say that the diagnostic or methodic issue between the sixteenth century Hippocratists and Galenists relates to the same fundamental ground of difference as that which divided Aristotle from Plato, and, at the time of which I now speak, split the Western Christian church to its foundations.

CLINICIANS AND SYSTEMISERS.

With the ultimate discard of Galenism the cleavage between the man who describes a case and him who writes about a disease becomes that, less obvious but still marked, between the clinician and the systemiser: of systemisers, the seventeenth, eighteenth, and nineteenth centuries saw in turn those who made use of chemical, mechanical, botanical, mathematical, organicist, and bacteriological conventions. The schism still persists, though masked by the transference of teaching from the lecture-room and wards to the laboratory, and by the desuetude of reading, whilst at the same time, to-day as ever, every systemiser or conventional diagnostician claims to be a clinician who diagnoses in terms of experience—a compliment not reciprocated, since no true clinician ever claims to be a systemiser. True, system to-day is represented by a jig-saw of systems rather than by any defined pattern, but the existence of the schism is shown by a dissatisfaction which, though perhaps repressed into the collective unconscious of the profession, is yet seeking satisfaction, and is made manifest by a conversion into irresponsibility in thought that is as distressing as the formalism against which it revolts.

There is a feeling that the bald diagnostic convention, of so many definite diseases constituted by so many definite groups of physical signs correlated with so many definite groups of post-mortem appearances, is one that has had its day. So much is shown when doctors declare that there is increasing difficulty in referring cases to a diagnostic *cadre* and that "the type of disease must be changing," though the real ground for complaint should be that the abundance of our experience can no longer be dealt with by methods once adequate. Perhaps, too, we are less confident than formerly of the sufficiency of any affirmations. A few years ago many hoped that bacteriology would render all diagnosis easy, but, as Sir William Job Collins predicted in a brilliant essay, disappointment has come to us. No system of specific pathology has been achieved, and, in spite of great successes, the bacteriological method has cut across many of our most cherished pathological and clinical groupings, as in the matter of the colon bacillus and that of focal infections generally. Under these circumstances some, like Sir James Mackenzie, have reverted to a Hippocratic symptomatology, tempered by neo-methodism, and are undeterred by the wit of those who think it less excellent—almost less moral—to pay greater attention to symptoms than to signs and to diagnose in syndromes instead of in diseases.

Yet those who abash a student by asking him to show a syndrome or diathesis on a plate forget that a *disease* cannot be so shown and that even the Galenists—who did not specifically name throughout their whole range the diseases that were specifically determined for almost every case—recognised that, in order to deal adequately with experience, a whole apparatus of subsidiary devices was needed. So they called into being not only the *morbus*, but the *morbi causa*, the *affectus*, the *effectio*, the *affectio*, the *laesio*, the *symptomata*, and the *signa*. Our present redundance of experience, accumulated as a result of instrumental amplification of our perceptual range and of mechanical facilities for communication and storage, seems to urge us anew towards the devising of fresh conventions.

Already psycho-analysts such as Freud, Jung, and Adler, morphologists such as Arone, Thooris, and MacAuliffe, and characterisers such as Kretschmer and Draper—to say nothing of the endocrinologists—interpret cases, not in terms of diseases, but of personality-types sufficiently indicating the actual or expected reactions of the patient to any given situation. The danger is, however, lest in the absence of a theory of diagnosis new conventions should lead us back into conventionalism, if not realism. To think, as we often do, with concepts that we refuse to define, seems no better than for a carpenter to work with tools whose special uses he will not consider; and it is certainly true that synthetic advance is only made when the integral concepts are first defined, albeit provisionally. To make use of such conventions and concepts as are now being devised, without consideration of the general value of such concepts, is a proceeding that will lead not to fruitful synthesis, but to new and chill academics.

What we must first define, therefore, is the attitude we shall adopt in respect of the two schools of diagnosis: the natural, allied with nominalism; the conventional, allied with realism. We may then well inquire whether, if the philosophic battle be drawn, as perhaps it is, there is anything to be said, pragmatically, in favour of one side or the other! Natural diagnosticians—true clinicians—will, perhaps, always suffer by reason of the lesser fitness of their method for verbal communication. They teach by example rather than by the spoken or written word, and their reluctance to employ verbal symbols as handy labels is ill-comprehended even by those who appreciate results. Always striving towards the simplicity of synthesis, they do not separate disease from the man, or man from his environment. Hence their study of epidemics as illnesses of communities, their therapeutic utilisation of airs, waters, and places, and their insistence upon

personal effort, while causation is to them in each case an infinitely complex relation almost insusceptible of generalisation. *Per contra*, nature, to the natural diagnostician, may become less a subject of observation than an object of superstition, while distrust of classifications may beget mental untidiness; and the study of symptoms, clinical indecision and a neglect of origins, if not an expectancy that slips into fatalism.

But the conventional diagnostician, whatever the convention for which he plumps, if he enjoys all the advantages of the trader who, discarding barter and cash transactions, makes use of financial and currency fictions, runs also the risks of those who, from sheer habit, come to assign real value to their symbols as well as to their concepts. If his faith in specific diseases, with specific etiologies demonstrable by special tests and curable by specific remedies with specific actions, carries him through many a verbal emergency, yet, since this faith has no greater value than the premise upon which it depends—the metaphysical reality of *species* and *genera*—it may betray him at any moment, blinding him to alternative explanations that open up rich fields of experience, and so entangling him in the meshes of his own classifications and dogmas that, finally, in Bacon's words, he worships idols of the theatre. Indeed, just as the naturalist may become a nature worshipper, so may the conventionalist become a gnostic like Galen, or, since most quackery derives logically from realism, a devotee of some magic box.

In these circumstances, what is to be our decision? Shall we elect to remain, like Buridan's ass, halting between two opinions and starved in the literal midst of plenty? If not, must we resign to be, in Sir Clifford Allbutt's words, either treaters of types, fit only to be abstract physicians practising *in vacuo*, or mere empirists who, having but a vague notion of a type, treat the sick man item by item, not appreciating the relative values of the several phenomena of each morbid period? Is there no avenue of compromise or of reconciliation?

COMPROMISE AND RECONCILIATION.

The history of medicine has, perhaps, answered these questions in showing us that security and advance come through ordered balance rather than through unilateral supremacy. But we require some plan or scheme that, in a work-a-day world, will help us to carry on our daily task without losing touch with either side. The difficulty is how may we best relate for practical purposes the thing, the thought, and the name or symbol which, on the other hand, it is equally our duty to distinguish.

One scheme has been set out with great skill by Messrs. Ogden and Richards who, in the "Meaning of Meaning," have given us a theory and canons of symbolisation which it is hoped they will supplement by theories and canons of interpretation and observation.

But historical priority, and for present purposes historical relevancy, pertains to the resemblant scheme of William of Occam, the Invincible Doctor, who died expatriate in, perhaps, 1349, and whose *terminism* or conceptualism—possibly already intended by Aristotle—has so greatly influenced Hobbes, Bentham, Mach, Poincaré, Vaihinger, and Weyl. Occam's life was devoted to the solution of the problem which Galen's epigram lays at the root of all difference of opinion. For him such concepts as those of *genera* and *species* only *suppose* an intention of the mind, and never an existent thing, singly. It has been said recently by Delisle Burns, that Occam, in dethroning the universal and restoring the particular to its proper status, thereby founded science; certainly it was he who, as Vaihinger says, first developed a clear and definite treatment of the *fictional* nature of general ideas or universals and laws in a manner that is still a model for us. He recognised that, although the theoretical non-existence of *ficta*—such as text-book diseases—must be admitted, they are nevertheless to be tolerated as conveniences subject to change in accordance with experience, knowledge, and necessity. He held, too, that nouns, like algebraical symbols, are merely denotative terms whose meaning is conventionally agreed upon; that the universal is not existent otherwise than mentally and as a *terminus*, or predicable, a mental concept signifying univocally several singulars; and that the concept is not so much a thing as an act, having no reality besides the act and the singulars of which it is composed, while the act of abstraction does not presuppose any activity of the understanding or will, but is a spontaneous secondary process by which perceptions are, as it were, stored as soon as several similar representations are present, though in a fading or evanescent state.

This conceptualism, which in its original form stood midway between the nominalism and realism of the scholastic period, has always manifested an impulse towards direct observation, a distrust of abstractions, and an aversion from hypostatisation of abstractions: it greatly paved the way for the work of the Renaissance and, far more than the logic of Bacon, inspired the method of Harvey, as is evident from the introduction to the "De Generatione." It has ever since lain at the foundation of that characteristic English philosophy which, like so much that is English, is none the worse for being better appreciated abroad. In its modern form, as stated by Vaihinger and others, it does seem to reconcile, so far as is humanly possible, the conflicting claims of naturalism and conventionalism in diagnosis.

It is true that whenever stated, in either its original or its modern form, it is at once said to be so commonsensical as to be obvious. But only too many speak as if they believed otherwise, and, in the long run, become the slaves of their verbal symbolisations. Current medical literature is bestrewn with clichés that are meaningless if not connotative of tenth century realism or Hindu demonology, while the demands made on us by the public and sometimes imposed by the State are, as often as not, unjustifiable save on grounds of some primitive realistic belief.

By the neglect of conceptualism we allow great wealth of experience to lie dormant and unused; by its acceptance we come abreast of eager workers everywhere, and cease to pursue conceptual rainbows in the laboratory while neglecting the perceptual at the bedside or in the field. Conceptualism gives us, in diagnosis, the freest scope for observation, unhampered by the fear of forms; it offers us the widest choice of interpretative conventions, and the amplest range of symbolisation, to the clarification of our cognition and the betterment of our communications. Lastly, it teaches that, in respect of any art or calling, the function of science is to furnish fictive concepts and systems of concepts that will economise thought, fructify effort, and tend to the increase of experience, avoiding at once the limitations of nominalism and the illusions of realism.

It may be asked, however, what, in the light of conceptualism, is a correct diagnosis? The best diagnosis that we can attain is that which, when we have observed accurately, interpreted adequately and symbolised correctly, best satisfies the intellectual and affective tendencies and, in the Hippocratic phrasing, enables the physician to do what is right and to constrain to his will, not only the patient, but the attendants and the circumstances.

Absolute diagnosis is a function of Omniscience alone and is exemplified only in the perfect restoration that it is the prerogative solely of Omnipotence to ordain. Absolute diagnosis is not within our physical apprehension; it eludes us, as does the absolute elude the astronomer, the physicist, the chemist, and the mathematician.

But the *idea* of the absolute is present and necessary to all science and every science and, for the science of medicine, is represented by the conceptual miracle of healing in which all diagnostic antinomies are

resolved—the act of creative restoration which, without verbalisation, expresses at once the lesion of function and structure and its effacement.

It is, perhaps, worth reflection that Hippocrates, who said that the physician is most godlike when philosopher, has himself more than any other been spoken of by men as divine. As much was never said of the infinitely more successful Galen, whose system, unshaken during a thousand years, still influences the teaching in every class-room and in every laboratory and still dictates, for the most part, the modality of our formal diagnoses. His system, his rationalisations, and his philosophisings are never credited with the elemental intuition and simple rightness that seem to us inseparable from the clear mind and natural method of Hippocrates of Cos.

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THE SURGICAL DIAGNOSIS OF STERNAL PAIN.*

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THE aim of this discussion is to throw light upon the conditions which most closely resemble cardiac and aortic pain. Dr. Parkinson has just ably described the characters of this pain and the methods of diagnosing it from the pain of other medical lesions, and it remains for me to consider those surgical changes which may be mistaken by the practitioner or patient for cardiac disease.

For convenience these conditions can be best grouped as follows: (1) lesions of the thoracic viscera; (2) lesions of the abdominal viscera; (3) local lesions; and (4) spinal lesions.

Lesions of the Thoracic Viscera.

Many changes within the thorax may give rise to sternal or retrosternal pain, but neoplasms of the lung and mediastinum more rightly belong to the province of the physician than of the surgeon, and I shall, therefore, only consider that type of pain which occurs with diseases of the œsophagus.

Carcinoma of the Œsophagus.—With the exception of the rarer varieties situated in the neck, nearly all cases of carcinoma of the œsophagus give rise to a pain which is situated in the midsternal region, and too much stress cannot be laid upon the fact that the site of the pain is no indication whatever as to the site of the obstructive neoplasm. At first the pain is sharp and is only present during the act of swallowing, and it is rather from the nature of its radiation than from its position that a diagnosis can be made. The patient will often state that during the act of swallowing there is a very sudden and sharp pain which, starting in the sternum in front, passes directly through to the back so that he may feel as though he is gripped by some sharp-pointed instrument. Practically never does the pain radiate upwards towards the upper part of the shoulder nor down the left arm; moreover, at this stage it is never increased by exercise. Later, when the growth has eroded beyond the walls of the œsophagus, the pain may be much more constant and may be only slightly increased by swallowing. Under such conditions it is dull, aching, or boring, and may then be more definitely situated at the site of the lesion. As a general rule the diagnosis is made evident by the presence of difficulty in swallowing, but this symptom is by no means always present, and I have seen a case where a carcinoma of the upper end of the œsophagus had widely spread into the apex of one lung and had led to the belief that extensive tuberculosis of the lung was present without ever giving rise to difficulty in swallowing. Generally, however, the increase of the pain during swallowing and the regurgitation of the swallowed saliva, or even of blood-stained fluid, will suggest the nature of the lesion, the presence of which can be easily confirmed either by an X ray examination after a barium meal or by the use of the œsophagoscope.

Cardiospasm.—There is, perhaps, no lesion of the œsophagus which is so frequently overlooked or so often incorrectly diagnosed as this rare and interesting condition. The spasmodic obstruction which has an acute onset and lasts only for a few hours or at most a few days, does not as a rule give rise to any difficulty in diagnosis, since it is associated with a complete inability to swallow. Cases of true cardiospasm are, however, much more insidious in their onset and usually present a long history. I have noticed in some of the cases in my own series that, although the patient sought treatment as an adult, the symptoms dated back to childhood, and cases have been described by Weber, Still, Poynton, and others where treatment was required in early childhood. In the common

* Being one of the opening addresses in a discussion held on Nov. 8th by the Medical Society of London (see p. 1010).

variety patients seek treatment only at about the age of 50 and two distinct groups may be recognised. In the first the chief symptom is pain, which has a more indefinite distribution than that of carcinoma of the œsophagus, being more commonly situated in the epigastrium and passing through to the back; this condition is commonly mistaken for gastric disease. It is at first intermittent, although the attacks may last for a day or two and is increased by the taking of food. Only in the earlier stages before dilatation has become definite will the pain follow the actual ingestion of each mouthful. As dilatation becomes more marked the pain tends to be more in evidence at the end of the meal and thus resembles gastric disease. The second variety, in which the chief symptoms are vomiting or the regurgitation of food, will give less difficulty in diagnosis. When the condition is well established there is a constant feeling of discomfort and fullness, although as the œsophagus dilates there may be spasms of severe pain which then become sternal or retrosternal. The discomfort itself appears also to be thoracic in situation and loses its close relationship to the taking of food. Frequently it becomes more marked as the day progresses, and owing to the distension of the œsophagus may often be associated with dyspnœa and a feeling of stifling. It is in this stage that the patient, and even the medical attendant, may be led to infer that the pain and dyspnœa are cardiac in origin. Vomiting, however, is generally present. It may occur spontaneously or be brought about by taking a deep breath; in other cases it is more evident when the patient lies down, so that he may actually be awakened at night by the regurgitation of the œsophageal contents. A large quantity is brought up and may give considerable relief to the discomfort and dyspnœa. Although the characters of the pain may in this stage somewhat closely resemble cardiac disease, there should not really be any difficulty in making a diagnosis. Careful attention to the past history will usually indicate that the œsophagus is at fault, and an indication of the nature of the change may be given owing to the fact that on attemptimg to withdraw a test-meal the fluid commences to be returned before the tube has reached the stomach. X ray investigation and œsophagoscopy should make the diagnosis clear. Confusion lies rather because an adequate case-history has not been taken than because the individual symptoms are not easy to identify. One would imagine that with the dilatation of the viscus without destruction of its coat there should be a definite area of hyperæsthesia and referred pain. So far, however, I have been unable to elicit the presence of such a symptom in my own series of cases. Possibly this may be due to the fact that the œsophagus lacks a closely connected serous coat, for we are led to believe that referred pain is due to distension of pericardium, pleura, or peritoneum rather than to actual inflammatory changes in the wall of the viscus.

Lesions of the Abdominal Viscera.

It is well known that patients who are suffering from lesions of the upper abdomen often seek advice in the belief that they are suffering from some cardiac disease. This is largely due to the fact that the majority of the so-called dyspeptic pains are, in the early stages at least, referred to the thorax. The difficulty is also increased by the fact that distension of the stomach is not uncommonly associated with dyspnœa and cardiac pain, and, perhaps, even an irregularity of the pulse, and I have found that in some such cases it has been necessary to ask a physician to eliminate the possibility of the presence of cardiac changes in addition to the upper abdominal lesion.

Gastric Ulceration.—As a general rule the pain of a gastric ulcer has so close a relationship to food that but little difficulty is experienced in determining that the lesion is in the stomach. Certain difficulties may, however, arise. In the earlier stages the pain is nearly always referred to the midsternal region, and before penetration of the muscular coat has occurred the ulcer may be associated with a band of hyperæsthesia which on the left side reaches as high as the nipple. In the later stages the area of hyperæsthesia disappears and the pain tends to become more localised. The real point of distinction lies, however, in the fact that with a chronic ulcer there is a sharply localised area of tenderness in the mid-epigastrium. Late ulcers which have penetrated do not show the close relationship of the pain to the ingestion of food, and, in that peculiar variety of ulcer which has a very short history, resembling carcinoma, the pain is frequently constant from the very onset, although the X ray discloses an ulcer which has penetrated deeply into the substance of the pancreas. In this stage, however, the pain is characterised by the fact that it radiates much more widely, and to an area which is distinct from that of a cardiac or thoracic lesion. It may pass upwards to between the shoulders or more commonly to the mid-spinal region, and in one case of my series the patient had been for some weeks under the treatment of a famous bone-setter who had applied massage and manipulations in order to overcome a supposed displacement of one of the small bones of the back. These more definite cases are nearly always, however, easily recognised owing to the changes in the test-meal and the results of an X ray examination.

Acute Dilatation of the Stomach.—Whether it be brought on by excessive feeding, by paralysis of the gastric wall, or by volvulus of the stomach, is nearly always associated with cardiac distress and with dyspnœa. In some cases, if the onset is sudden, the patient may become profoundly collapsed and the pulse may become small and irregular. The more simple forms of acute dilatation are, however, associated with vomiting, and therefore but little difficulty arises in making a correct diagnosis. With a volvulus of the stomach there is no vomiting, and a careless examination may fail to reveal the fact that there is an enormous distension in the epigastrium due to the dilated viscus.

Visceroptosis.—A case of general visceroptosis in which the symptoms are limited to the stomach may resemble a cardiac lesion in that the pain is always increased by exercise or work and is relieved by lying down. Such a condition is frequently associated with distension of the stomach by gas, which will give rise to a certain amount of cardiac distress and may make the patient believe that her heart is at fault. A careful investigation of the history will reveal the presence of past gastric or intestinal attacks, and an examination will show the presence of ptotic changes in the abdomen and viscera, so that no real difficulties will arise.

Lesions of the Pancreas and Gall-bladder.—Chronic inflammatory lesions of these two viscera may give rise to a constant and relatively severe pain which in part is referred to the midsternum, but is usually to be distinguished from a cardiac pain by the fact that it is more marked after food and is referred to a different area. Characteristic of gall-bladder and liver pain is the presence of referred pain in the right shoulder, whereas pain associated with the pancreas is more common in the back and passes up to the left shoulder. In no case does the pain pass up to the front of the left thorax and down to the left arm. Attacks of severe colic, which are so frequent with gall-stones, and are present in many cases of chronic pancreatitis, should not give rise to any difficulty. The suddenness of onset and the severity of pain, its localisation to the upper abdomen, and its sudden cessation are all characteristic and have to be distinguished from an acute disaster in the upper abdomen, such as a perforation or acute pancreatitis, rather than from any interthoracic lesion. The last-named disasters should never lead to an error of diagnosis, for they are associated with the characteristic rigidity of the abdominal muscles.

Local Lesions.

A tuberculous focus in a rib or cartilage overlying the precordium, or the presence of a bony tumour in the

same situation, will at first give rise to localised pain which may be mistaken for a cardiac lesion, but even in these early stages they will probably be associated with definite tenderness on pressure which should give an indication of their nature. Later a tumour will form which, if solid, will not pulsate, but, if fluid, may have a transmitted pulsation from the underlying cardiac beat, and thus may be mistaken for a penetrating aneurysm. In such cases a diagnosis on purely clinical grounds may be difficult, but a carefully taken X ray will nearly always reveal inflammatory changes in the bone which can be distinguished from the simple pressure erosion such as occurs with an aneurysm. However, it is known to us all that cases have occurred in which a penetrating thoracic aneurysm has been opened in the belief that it is an abscess.

Spinal Lesions.

A lesion of the spinal cord—the meninges or the vertebral column—may, if it involves the nerve-roots, give rise to an area of hyperæsthesia which, overlying the precordial area, may simulate the cardiac lesion. There should, however, be little or no difficulty in that nearly all spinal lesions give rise to bilateral hyperæsthesia, or, if there be a unilateral tumour compressing the roots only on one side, there is almost certain to be some interference with the functions of the cord, leading either to changes in sensation or to a spastic paralysis of the legs. With tuberculous disease there should be but little difficulty, for examination will reveal the presence of a rigidity of the vertebra even if there be no deformity or abscess formation. In any case a lesion of the spinal cord is likely to be rapidly progressive unless adequately treated, the only common exception to this being a case of meningitis circumscripta, where the hyperæsthesia alone may persist for a considerable period. In one case of my own there was a band of such hyperæsthesia passing round the thorax, and no other indication of any spinal cord change for nine months after the onset.

THE TREATMENT OF CONTRACTED PELVIS WHEN FIRST SEEN DURING LABOUR.

An Address delivered before the Harveian Society of London on Nov. 4th

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THE large number of varieties of contracted pelvis and differences in actual size, together with the variations in the size and position of the child and strength of uterine contractions, call for corresponding elasticity of management and treatment. A general theoretical survey of the whole subject of contracted pelvis would take a long time, and therefore I propose to select one particular aspect of the problem, and to deal with it on strictly clinical lines based upon observations made by actual contact with patients seen in a maternity hospital.

One of the most frequent obstetrical emergencies sent to hospital is the patient who has been long in labour and remains undelivered because of some apparent obstruction caused by pelvic contraction. I say "apparent" because an important preliminary to any treatment is the correct diagnosis that the cause of delay is actually due to pelvic obstruction. Indeed, one of the commonest errors in obstetrical diagnosis is the assumption of contraction as a cause of delay or failure to deliver, but of this important matter I shall have more to say later. A further point to bear in mind is that, while the minor degrees of contraction are quite commonly seen, the more serious degrees which cause a really obstructed labour are rare in this part of the country. In fact, very many of the practitioners who have conducted a thousand or more confinements have never met with a severely contracted pelvis, though they will probably remember many cases where there was a difficult delivery by forceps with much moulding of the head. Therefore in any case of delay due to disproportion between the fœtal head and the pelvis there will be a strong probability, based upon the small case-incidence of severe contraction, that vaginal delivery of a living child can be effected.

The Flat Pelvis.

There are two chief clinical types of delayed labour due to disproportion, based upon the two varieties in shape of the contracted pelvis, and it is important to grasp the differences between these two groups which can be ascertained by clinical examination.

In the first group we have the simple flat pelvis in which the principal factor is the projecting sacral promontory encroaching on the true conjugate. The characteristic clinical features here are as follows. The patient has had a prolonged first stage in which the membranes ruptured at the beginning or during the early hours of labour. The head was floating above the pelvic brim before labour, and is still comparatively high in spite of the long duration of the first stage. The failure of the head to descend through the brim and engage with the undilated os, left by the premature rupture of the membranes, is responsible for its slow dilatation, or even stationary condition. In the severer cases the nipping of the cervix by the head against the symphysis and promontory will produce an increasing œdema of its lips. The mother is probably very tired, but at this stage the fœtal heart will still be normal.

The proper treatment, of course, depends upon the answer to the all-important question, Will the head come through the brim? and before we consider treatment it will be necessary to spend a few moments in attempting the answer of this question. Perhaps in no other condition in midwifery are a sound judgment and ripe experience more valuable. A correct opinion is often very difficult to form, but it will be of vital importance to both mother and child.

The Degree of Obstruction.

Let us try to answer the question. The first considerations, before or early in labour, are the pelvic measurements, the amount of overlapping of the head above the symphysis, and the ease or difficulty with which the head can be pressed down into the brim. Favourable indications are the absence of any marked diminution of the measurements, particularly the external conjugate, and considerable difficulty in feeling the sacral promontory by vaginal examination. If this point can only just be touched it need offer very little, if any, difficulty, but if it is easily reached and gives the impression of over-hanging, the brim will probably cause serious obstruction. It is important also to examine the degree, if any, of overlapping. If the head overlaps only the deep surface of the symphysis, and therefore does not actually overhang the superficial border, it will probably mould sufficiently to pass the brim; but any definite overhang indicates a severe degree of disproportion.

So much for preliminary considerations which, we will assume, discover no evidence of severe obstruction. When the patient is examined during labour no further opinion can be expressed until the membranes have ruptured and until pains are strong. The reason for the second is obvious. The membranes must be ruptured to allow the uterus to act directly on the child, and thus press the head hard into the brim. It is necessary, therefore, to re-examine the patient after two or three hours of good pains have followed rupture of the membranes. The points now to be noted are fixity of the head, increasing flexion—shown by the increasing prominence of the forehead and disappearance of the occiput—and descent. Increasing prominence of the forehead with descent of the occiput

is a very favourable sign, and, with absence of overlapping, usually means that the head will pass the brim, given strong contractions and sufficient time. It will be noted that very much information can be obtained by abdominal examination. By the vagina favourable signs will be engagement of the head with the edge of the os, followed by progressive dilatation, and absence of much œdema of the cervix. Palpation of the sagittal suture may yield useful information of the obliquity of the head, but estimation of this physical sign requires very much practice and experience. Unfavourable vaginal signs are failure to reach the head, with maintenance of it in this position, and non-dilatation of the os, which hangs down as a loose fringe, unoccupied by the obstructed head.

Definite Obstruction at the Brim.

After examination on these lines we are faced with three possibilities: (1) the head will not and cannot pass the brim; (2) the head may or may not come through; (3) the progress of fixity, flexion, disappearance of the occiput and dilatation of the cervix is clearly marked, indicating that natural delivery is only a matter of reasonable time.

In the first case the problem is one of the greatest difficulty if the child is alive. The alternatives are Cæsarean section, version, pubiotomy, and craniotomy. If the child is dead or moribund, perforation is obviously the only thing to be done. Of pubiotomy I cannot speak from any personal experience. It is an alternative to craniotomy rather than Cæsarean section. Version is of surprising value in some cases seen early when the uterus can be rendered sufficiently soft by an anæsthetic to eliminate the danger of rupture of the lower segment. Apart from this the chief practical difficulty is the incomplete dilatation of the os, preventing the entrance of the hand into the uterus without laceration of the cervix. If version is decided upon, every care should be taken to dilate the os slowly in order to avoid laceration, and after the leg has been brought down the child should be left alone and not pulled upon, to allow the uterus to complete the dilatation by driving the child's body through the os. The temptation to pull on the leg should be sternly resisted.

Successful version requires considerable judgment and skill. Its possible time of application is limited, for it can only be done when there is sufficient liquor amnii remaining to allow mobility of the child in utero, and, on the other hand, the os must be sufficiently dilated to admit the hand without laceration. Not the least exercise of judgment is that control of the temptation to extract the child's body quickly by traction on the leg which has just been brought down.

It is in this clinical condition of labour obstructed by a flat pelvis with the child alive and the os only partially dilated, with no possibility of the high vertex passing the brim, that Cæsarean section has been urged and practised by some obstetricians. Whether or not it is a safe method depends entirely upon the possibility of infection having already occurred. In the early stage just described, where aseptic precautions have been observed with minimum vaginal examination, the risk to the mother is very small, in spite of the membranes having ruptured prematurely, and it is probably the best way out of a difficult situation. At a later stage, however, when many hours of fruitless labour have passed, with consequent exhaustion of the mother and distress of the child, especially if forceps have been applied and the cervix and perineum bruised or lacerated, Cæsarean section definitely has no place, and cannot be too strongly condemned. It is a source of great danger to the mother, and frequently cannot save the child. The only treatment in such a case is perforation of the head.

Cases of Uncertainty.

The second clinical group is that in which much careful thought is required. Here, at the beginning of labour, it is uncertain whether the head can pass the brim. This group tends to diminish relatively in numbers with increasing experience, but there will always be some cases on which it is impossible to form an opinion in the early stages of labour.

If there is sufficient obstruction present to prevent the birth of a live baby, Cæsarean section is obviously the best treatment, provided conditions are suitable. During the early stages, therefore, the labour may be regarded as a "trial labour"—that is, the patient may be watched closely, after the membranes have ruptured, for signs of descent and successful vaginal delivery; but if observation finds that no progress is evident, then, at the earliest moment for diagnosis to be made, Cæsarean section should be done. It is necessary again to emphasise that throughout the so-called trial labour every possible care must be taken in vaginal examination to prevent infection.

If, however, it is considered that the head will pass the brim there are certain points to bear in mind. We may expect a long and fatiguing first stage occupied in moulding the head, and there is nothing of greater value to the labouring mother than morphia-scopolamine sleep. As soon as it is decided that labour shall run its course, an injection of morphia $\frac{1}{6}$ to $\frac{1}{4}$ gr. and scopolamine 1/150 gr. should be given at once, the scopolamine being afterwards repeated every one or two hours. It is not possible or desirable here to describe fully the technique of this form of narcosis, but let me emphasise its very great value in conserving the physical and moral strength of the mother. Under its influence much pain and anxiety are saved and dilatation is assisted, while the contractions are scarcely altered. Indeed, I regard morphia and scopolamine as essential adjuncts to the treatment of the first stages of labour with a flat pelvis.

In favourable cases—and in most of them treatment is generally successful—the processes of dilatation, moulding and passage through the brim are remarkably easy and quick, and the patient suffers comparatively little fatigue and pain. Nothing can be more striking than the contrast between the condition of the woman made tired and anxious by long hours of unmitigated labour, with slow dilatation, and that of the same woman relieved by an injection of morphia and 30 gr. of chloral by mouth. Apart from the improvement in the general condition, dilatation is usually much accelerated and descent of the head assisted. But if the head becomes fixed in the brim without further descent, help may be given by forceps, provided that the os is dilated and time has elapsed for moulding to produce the maximum adaptability of the head. When the head has once passed the brim into the cavity, forceps will seldom be necessary, as there is now sufficient room for easy descent.

The Abuse of Forceps.

In the third group there is certainly no insuperable obstruction to the birth of a live baby, and we have sufficient data from clinical examination to make it clear that the head can pass the brim. This is one of the most frequent of all emergencies admitted to a maternity hospital as obstructed labour—because of the failure of too early forceps application—and there is none more easily treated. Forceps have usually been applied for two reasons—first, the knowledge that a contracted pelvis is present gives the doctor a bias in favour of forceps which he is anxious to use as soon as possible, and, secondly, the long painful first stage and slow dilatation, unrelieved by morphia and chloral, stimulate the relatives to urge that something should be done. Forceps are then applied through a partially dilated cervix to a high and incompletely moulded head. While the absence of moulding effectually prevents engagement in the brim, the forcible attempt has torn the cervix, bruised the perineum, and still further exhausted the mother. The baby's head meanwhile has suffered stress which will render it less able than before to stand the ordeal of delivery.

No amount of argument or excuses can justify the application of forceps to a high unmoulded head through a partially dilated cervix. It is an ignorant

and stupid practice, and is the cause of more disaster and disability than any other manipulation in midwifery.

After admission to hospital these patients are treated by morphia and chloral and left alone for moulding and full dilatation to occur. A quick spontaneous delivery usually follows, but, if necessary, forceps are reapplied when the head has passed into the pelvic cavity, delivery being effected without difficulty.

The Generally Contracted Pelvis.

The generally contracted pelvis offers a rather different clinical problem. It differs from the flat pelvis in that, when examination or consultation is made on account of delay and lack of progress, with increasing fatigue of the mother, the head is found to have passed the brim and become impacted in the cavity just below the brim. Dilatation of the cervix is probably complete, the head is extremely flexed, there is a large caput, and some œdema of the os. In the treatment of this form of obstruction it is essential again to remember that no attempt at delivery by forceps should be made until sufficient time—at least three hours—has elapsed after full dilatation of the os for moulding to adapt the shape of the head. But here there is not the same likelihood of the absence of moulding as in the same stage of labour with a flat pelvis, because it is only by moulding that the head will have been able to descend into the small pelvic cavity, where it is generally found when attempts at delivery are made. The treatment here is the application of forceps and steady firm traction, which will have to be maintained until the head is clear of the bony outlet. Indeed, sometimes it is the outlet which offers the greatest difficulty. If the child is alive, forceps traction must be maintained consistent with the mother's condition; but if the child is dead or dying the head should be perforated by passing the perforator along between the shanks of the forceps blades as they lie in situ. It is unnecessary to remove them and reapply them after perforation. Traction, after perforation has allowed the partial collapse of the head, will usually succeed in delivering the head remarkably easily compared with the fruitless efforts made before perforation.

In conclusion, I should like to emphasise again that hospital experience shows that the best treatment for the minor degrees of contraction which hold up the head above or in the brim is *morphia*, *chloral* and *time*. Of far more value than ill-advised early application of forceps is the quiet sedative effect of the morphia-sleep which enables the head to mould and the patient to conserve her strength, while she is saved the laceration and damage which so seriously hinders her recovery.

DERMATITIS FROM HANDLING FLOWER BULBS.

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"Lily rash" from cutting the stems of flowers, chiefly narcissi, and from handling the bulbs of hyacinths, daffodils, narcissi and tulips, has been known to occur from time to time, mostly, it is believed, in Jersey and in the Scilly Isles. The rash was thought to be due to the acrid juice of the stalks of the flowers, or to the oxalate of lime in the bulbs.

Recently two large firms with extensive bulb packing and sorting departments have been visited, with a view to amplifying knowledge of the occurrence and character of dermatitis from handling flower bulbs. A small proportion of packers and sorters of bulbs were found to be suffering from a strictly localised dermatitis, which extended under the nail, where splitting of the skin caused considerable pain and disability. The longer the nails were worn, the more pronounced was the condition. The nail substance was in every case unaffected. Dermatitis occurred after a few days' work handling bulbs, and was progressive until the worker sought the protection of gloves or finger-stalls, when the condition improved rapidly.

All the workers affected placed the onus of the complaint on tulip bulbs. Those who handled narcissus bulbs exclusively were affected in quite a different way—the skin of the extensor aspect of the terminal phalanges was worn and flaked away by small abrasions and friction. Those selecting, brushing, and packing only hyacinth bulbs were unaffected.

The cause of the peri- and hyp-onychial dermatitis from handling tulip bulbs might appear at first to be friction, but this as the sole agent may be rejected. The onset of the condition within a short time of starting work on bulbs; the course, increasing in severity day by day until protection to the exposed parts is obtained; the fact that those with long, rather than short, nails—i.e., those with more exposure of the finger-tips, are singled out, and that comparatively few are affected—these are all points against the friction explanation. It has been noted repeatedly that where friction causes soreness of the finger-tips there are few physical signs, and complaint is made after some days' work; the condition, also, tends to improve to a marked degree with time and thickening of the skin.

An examination of the bulbs of various flowers readily discloses that hyacinths, narcissi, and daffodils, rather than tulips, would be the chief offenders if friction were the explanation of the peri- and hyp-onychial dermatitis, whereas workers were unanimous in fixing the blame on tulip bulbs. Now the tulip bulb is peculiar in that it is protected by a single layered and rather rigid testa, which easily splits on handling and reveals the bulb substance. The hyacinth is wrapped around with several layers of testa covering, and so are the bulbs of daffodils and narcissi.

It seems not unreasonable to suppose that trauma first occurs, followed by the introduction under the nails of an irritant derived from the bulb substance. In the bulb substance are stored the plant foods, but which of these constitutes the irritant it is difficult to say, as little is known of the chemistry of the bulb. Whatever may be its chemical composition, it was easy to express from a tulip bulb an acrid juice which experimentally produced a subungual irritation in a short time, without the existence of previous trauma.

There has recently appeared a suggestion by the International Labour Bureau that the *Leptus autumnalis*, or harvest bug, is responsible for erythema and conjunctival irritation in workers among hyacinth bulbs (Zeper). I have been unable to verify this statement. Moreover, the type of inflammation was not in any way suggestive of a parasitic origin.

While examining microscopically the covering testa of various bulbs, I found that the testa of the Roman hyacinth, which is fine and flaky, readily produced a fairly intense irritation of the skin of the neck. This was verified by my colleague, Dr. J. C. Bridge, by experimental production of erythema and irritation. There seems here to be a resemblance to the well-known dermatitis from *Primula obconica*, *Rhus toxicodendron*, and other plants.

In conclusion, chronic peri- and hyp-onychial dermatitis is produced by handling tulip bulbs and constitutes yet another of the trade stigmata, the recognition of which may be of great value to the medical observer. A similar condition has not, to my knowledge, been caused by any other occupation.

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PRESENTATION TO A MEDICAL MAN.—On Oct. 27th, at Littlebourne, near Canterbury, Dr. Edward Griffith Freeman Morris was presented with a cheque for £225, a travelling bag, and an illuminated address on his retirement after 37 years of practice. Thirteen hundred people from 14 different villages subscribed to the gifts.

Clinical and Laboratory Notes.

A PECULIAR CASE OF PNEUMOPYOPERICARDIUM.

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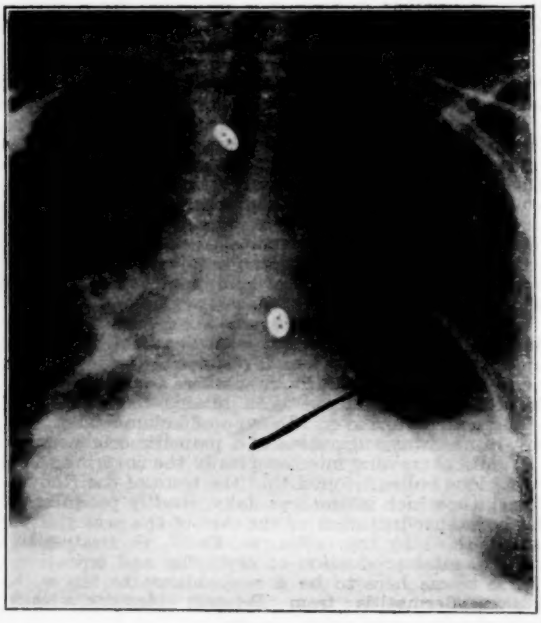
IN view of the rarity and clinical interest of this condition the following case appears worthy of record.

On March 9th, 1925, a boy of 11 was admitted to St. Thomas's Hospital with a week's history of pain in the region of the left shoulder, increased by deep breathing; there had been occasional vomiting throughout the week, and, on the day of admission, a slight epistaxis.

Condition on Admission.—Breathing was at the rate of about 40 to the minute; he was a little cyanosed and somewhat distressed by the pain in his shoulder. Temperature 103° F., pulse regular at 140 to 150, but of poor tension. Physical examination showed some enlargement of the cardiac dullness to the right, and the heart sounds were a little indistinct; there was no murmur or friction. Over a small area at the angle of the left scapula diminished resonance to percussion was found, with tubular breathing and ægophony. The tongue was furred and both tonsils large, but not acutely inflamed; the urine was normal.

Pericardial effusion was suspected, but the physical signs were too anomalous for a definite diagnosis to be made. For the next few days there was no striking alteration in his condition, but on the 15th he complained of abdominal

FIG. 1.



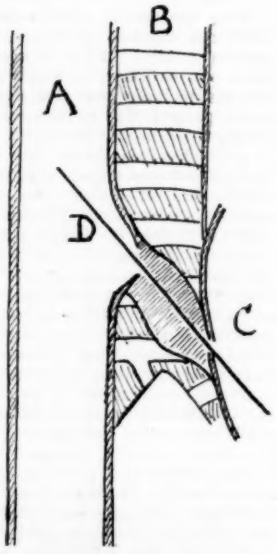
pain, and when examined was found to be rigid and tender in the epigastrium; at the same time the cardiac dullness had almost disappeared, to be replaced by hyper-resonance. The heart sounds were audible, but very faint, the pulse very rapid and feeble, and the general condition much changed for the worse. A blood-count performed this day showed: red cells 4,320,000; leucocytes 20,300; on the following day the leucocyte count had risen to 45,700, and an X ray which, in the prone position, had showed only the appearances of a large effusion, displayed, when taken semi-erect, a large and distinct collection of gas in the pericardial sac, above the fluid level (Fig. 1).

A blood culture taken 48 hours earlier proved sterile. The diagnosis of pneumopyopericardium having been made, operation was decided on, and performed by Sir Cuthbert Wallace.

Operation.—Through a horizontal incision the fourth and fifth ribs in the left nipple line were exposed and resected and the pericardium incised; very foul pus, accompanied by gas, escaped, and the surface of the heart could be seen covered by purulent lymph. *B. welchi* antiserum (40 c.cm.) was given, and the pericardium drained. The boy survived the operation for a full week, his general condition showing remarkable fluctuations; a striking feature of the case after the operation was the abnormally large quantity of purulent fluid discharged from the wound, the dressings being soaked through many times a day. Death took place after a prolonged period of cyanosis and collapse, ending in coma.

Cultures of the pus showed a hæmolytic streptococcus, with *B. mucosis capsulatus* and a gas-forming anaerobe.

FIG. 2.



A = œsophagus; B = trachea; C = pericardium; D = probe passing through sinus from œsophagus into pericardium.

The *post-mortem examination* showed very clearly the peculiar origin of the condition. A caseous and partly calcified tuberculous lymph gland lying behind and to the right of the trachea just above its bifurcation, had, by adherence to and traction upon the œsophagus, created a diverticulum, from which a sinus led, through the remains of the infected gland, directly into the pericardial sac (Fig. 2).

Infection had no doubt taken place from food particles actually entering the pericardial sac, it is probable that after operation a large part of the pus draining from the wound was composed of the milk upon which the boy was being fed. The pericardium was adherent to the lung on either side, and showed an advanced acute suppurative inflammation. The remaining organs showed little pathological change; there was no evidence of consolidation in either lung.

Discussion.

The first account of such a condition appears to have been given by Bricheteau in 1844. Stokes in 1855 had collected three cases. Under the more general heading of pneumopericardium James,[1] in 1904, gives an account of 37 authenticated cases, and emphasises the rarity of the disease by noting that no case of this kind has been observed at the Vienna City Hospital during the 35 years of Schrötter's experience there nor during the whole reign of his predecessor, Skoda. Rigler,[2] reporting a case of tuberculous pericarditis in February, 1925, in which artificial pneumopericardium had been induced under the erroneous impression that the effusion was pleural, refers to Rosler's review in 1918 of 73 cases, all that had been then recorded. His classification of the ætiology is as follows:—

(1) *Infection by Gas-producing Organisms.*—(Five out of James's 37 cases, one of these, apparently secondary to facial erysipelas, recovered.)

(2) *Trauma* (18 of James's cases—i.e., 50 per cent.).—(*a*) By puncture wound of chest wall; (*b*) by penetrating wound of œsophagus (James's own case was caused by the swallowing of a fragment of bone); (*c*) fracture-perforation of ribs or sternum.

(3) *Perforation following disease of* (*a*) pericardium; (*b*) neighbouring organs—e.g., empyema, gastric ulcer.

[1] James: Transactions of American Physicians, 1904.
[2] Rigler: Jour. Amer. Med. Assoc., lxxxiv., 504.

(4) *Artificial:* (*a*) Accidental (as in Rigler's case); (*b*) intentional, in the attempts, attended by very dubious results, to treat pericardial effusion by the introduction of air.[3]

Rigler notes the following characteristics of the condition. The *symptoms* are very variable, depending on the ætiology of special cases; two only are more or less constant—pericardial pain and attacks of dyspnœa, cyanosis, and syncope. On the other hand, the *signs* are constant and unmistakable—a shifting area of tympany over the precordia, accompanied by splashing, gurgling, or tinkling sounds synchronous with the heart-beat, with greatly diminished heart sounds The X rays provide certain confirmation of the diagnosis. The clinical and X ray picture is, according to Rigler, only likely to be confused with one other condition—that of pneumomediastinum, a complication of surgical emphysema following chest-wounds. This, however, can be distinguished by (*a*) the fixed nature of the tympanitic area in varying positions of the body; (*b*) the normal intensity of the heart sounds; (*c*) accompanying emphysema of connective tissue in the neck; (*d*) complete, or almost complete, absence of symptoms, and rapid recovery.

The case here recorded is probably unique in its ætiology. James quotes four cases caused by sinus-formation through tuberculous lymph glands, but the communication was in every case to bronchus or lung; on the other hand, of his œsophageal cases three followed carcinomatous ulceration and three were traumatic.

In conclusion, I acknowledge with gratitude the assistance received from Prof. Hugh MacLean, under whose care the patient was admitted, in preparing this account.

PREGNANCY, HYPERPIESIA, AND MENINGITIS.

BY JOAN L. LUSH, M.R.C.S. ENG.

THE following case is of interest as showing the occurrence of hæmorrhagic meningitis in association with pregnancy and hyperpiesia.

Mrs. C., a married woman of 35, was admitted to University College Hospital complaining of severe headache and pain in the back of the neck with vomiting for three days. Seven years previously she had been in another hospital for six months with Sydenham's chorea, but otherwise had always been healthy.

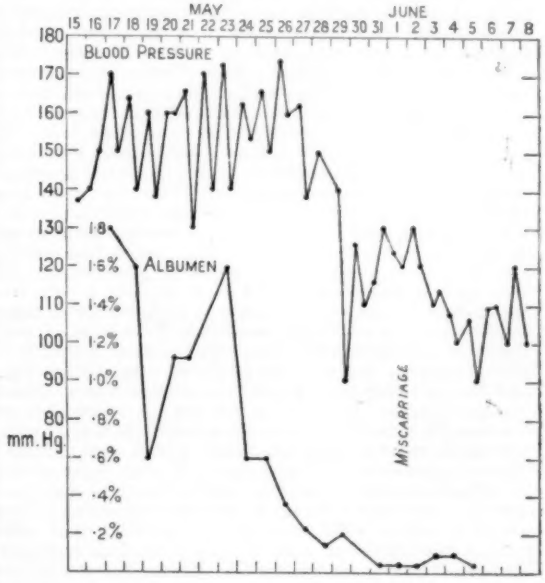
On examination she was found to be pregnant about five months, this being her first pregnancy. Her urine was scanty in quantity and boiled two-thirds solid with albumin, but no acetone was present and no abnormality was found microscopically. The diastatic index was normal. The heart, lungs, abdomen, and nervous system appeared normal; the pulse-rate was 70, the temperature 98° F., and the blood pressure 140 mm. Hg. There was no œdema and the fundus oculi showed no changes. The patient complained of severe pain, chiefly in the back of the head and neck, and the neck muscles were kept in rigid contraction. Drastic purgation was instituted and alkalis and a strong diuretic given by the mouth; aspirin and pyramidon were given in an attempt to relieve the headache. No further vomiting occurred.

Thirty-six hours after admission the blood pressure rose to 170 mm., and the urine was still loaded with albumin. The pain was now greatest in the back of the neck, and Kernig's sign was definitely positive on the left side but doubtful on the right. Both plantar reflexes were flexor, and the knee-jerks were brisk. Lumbar puncture was thought advisable, and about 10 c.cm. of deeply blood-stained turbid fluid were obtained at low pressure. After centrifugalisation the supernatant fluid was deep yellow in colour and gave the Hb bands in the spectrum. There was a definite increase in the lymphocytes, but no organisms were seen, and no growth was obtained on culture. The W.R. was negative. As the headache was slightly relieved by the spinal puncture this was repeated next day, similar fluid being obtained but with some difficulty. The pathological findings had not altered. Stiffness of the neck muscles and a double Kernig were present.

[3] Vide Oppenheimer: Jour. Amer. Med. Assoc., lxxxii., 1685.

The general condition of the patient was good, and pulse and temperature remained normal. The blood pressure varied between 130 and 180 mm., tending for the most part to be higher in the morning. The output of urine continued to be small and the percentage of albumin high. Fœtal movements were felt in the uterus, which contracted under manipulation. In the course of a week the pain in the head and neck had become less severe though the other signs remained as before. Lumbar puncture was done once more, this time yielding clear but bright yellow fluid, which still showed excess of lymphocytes, but no longer gave the Hb. bands.

A fortnight after admission the patient complained of intermittent pain in the lower part of her back and abdomen; about the same time the amount of albumin in the urine decreased markedly, and the blood pressure fell suddenly to 90 mm.; fœtal movements could not be felt, but the pain in the back and pelvis continued. Three days later a slightly macerated fœtus weighing 2-3 lb. was delivered without difficulty. The patient made an uneventful recovery, the blood pressure falling to between 100 and 120,



and the albumin in the urine decreasing to a trace. The headache and stiffness of the neck disappeared entirely, and the patient left the hospital apparently quite well four and a half weeks after admission.

In this case, in the absence of any direct evidence of another cause, it seems reasonable to suppose that the hæmorrhage from the meninges was an unusual manifestation of pregnancy toxæmia but comparable with the hæmorrhages seen post mortem in the liver and kidneys of acute cases. The constant increase in the lymphocytic content of the spinal fluid suggests a possible infective origin, but the absence of fever or increase of pulse-rate is against this view. In spite of the fact that the spinal fluid showed definitely that pathological changes had occurred in the central nervous system and the symptoms were not therefore due merely to meningism of toxic origin, yet the patient never once showed any twitching, fits, or mental change, which are the more usual cerebral manifestations of pregnancy toxæmia. As frequently happens, recovery in this case seems to have been determined by the spontaneous emptying of the uterus. The meningitic symptoms cleared up gradually but the fall in blood pressure and drop in the albumin content of the urine were markedly sudden and probably coincided with the death of the fœtus, though this was not expelled till two days later.

I am indebted to Dr. Batty Shaw for permission to publish this record.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

TREATMENT OF ŒSOPHAGEAL CARCINOMA.

A MEETING of this Section was held on Nov. 3rd, Mr. V. WARREN LOW, the President, being in the chair, when Mr. F. J. STEWARD opened a discussion on the treatment of œsophageal carcinoma, which might, he said, either be frankly palliative or aim at a cure.

Palliative Treatment.—The chief symptom was dysphagia due to the obstruction caused by the growth, and to this palliative treatment was directed. The lumen of the structure could be either enlarged by bougie dilatation, or maintained sufficiently to allow food to pass by inserting tubes of various kinds, or diathermy or radium might be employed to destroy the growth. Or, finally, starvation could be guarded against by doing gastrostomy. All these means had their advocates, but none were really satisfactory. Since 1896 he had seen many cases of carcinoma of the œsophagus treated with Symonds's tubes, and cases not lending themselves to this dealt with by gastrostomy, the latter being usually cases in which the disease was advanced and in which death supervened, though the discomforts in the end were less than if that operation had not been performed. Later, when the speaker had charge of the throat department at Guy's, he used tubes for these cases less often, resorting more frequently to primary gastrostomy, so that now it was many years since he used a tube for the condition under discussion. Admittedly a tube might function well and cause but little trouble, but that was not always the case. The patient might find the placing of the tube in position very distressing, and the gnawing pain when it was in situ sometimes was unbearable. In addition, the frequent blockage of the tube by either food or growth meant its withdrawal and the re-enactment of the dread process of reposition. Witzel's gastrostomy, conversely, if performed when the diagnosis was arrived at, made the case manageable after the first fortnight, and feeds could be taken without either difficulty or discomfort, and the patient soon learned how to guard against leakage. He agreed that gastrostomy for this condition showed a high mortality, but the assurance of freedom from starvation which it gave made it superior to treatment by tube, diathermy, or radium, while the freedom from subsequent irritation seemed to prolong the patient's life. Two of his patients with this condition lived more than five years after their gastrostomy.

Curative Treatment.—The two means so far employed in attempts to cure carcinoma of the œsophagus were radium and surgical removal. The first of these had been widely used for 18 years, but from the standpoint of cure the results attained had been disappointing. It was not denied that radium could destroy carcinoma of the œsophagus, but complete disappearance of the disease under radium was exceptional, a reappearance usually taking place sooner or later. There seemed to be a double explanation for this. Variation in the effect of a given dose of radium might be because of a difference in the resistance of the cells or their surrounding stroma to the rays actually reaching them; it probably was not due to differences of tumour hardness. Possibly the relapses were due to the limited radius of action of the radium, the dose given having been too small to destroy the growth. Guisez, of Paris, of 270 cases so treated, had 30 who survived more than 18 months, two being free after ten years, one five years after, and four three years after. But he used doses of from 100 to 120 mg. of radium bromide divided into three tubes which were placed end to end in a hollow bougie. There were five or six treatments, given every two days, a dosage three times as great as that used by most other people. Guisez made it a point of great importance that the whole vertical extent of the growth should come directly under the emanation. Improved results with radium, Mr. Steward thought, would depend on earlier recognition of the disease and the use of stronger doses.

Dealing next with treatment by excision, he first referred to operation on the mediastinal portion of the œsophagus, remarking that very few patients had survived this procedure more than two or three days. Four chief factors accounted for this gloomy result. The first was a rapid infection of either pleura or mediastinum, or both, and, secondly, the œsophagus was so straight that when it was mobilised there was no slack. Also the absence of a serous coat and the softness of its walls militated against sutures taking a firm hold. Finally, a reconstruction of the œsophagus after resection for carcinoma was a matter of great difficulty. He knew of only three patients having recovered from operation undertaken for removal of carcinoma in the mediastinal part of the œsophagus, and these he described. A study of those cases led Mr. Steward to the conclusion that it would be justifiable to attempt operation in an uncomplicated case in which the growth seemed to be small and localised to the œsophagus if the patient was in good general condition. For a growth in the lower third of the œsophagus he considered that Lilienthal's operation was more suitable, Torek's being the best when the disease was in its middle third. He had explored three cases of limited œsophageal carcinoma, with the object of removal, in people aged 51, 62, and 53. The anæsthetic employed was intratracheal oxygen, and was a very satisfactory one. In two of the cases several intercostal nerves were blocked by using a 1 per cent. solution of novocaine. All three, unfortunately, ended fatally. Yet in some ways the results were encouraging, for the diagnosis of the condition and the selection of the cases erred very slightly.

His deliberate view, Mr. Steward concluded, was that as technique improved better results from operation could be looked for, as the symptoms of the disease were straightforward and distinctive and it was not difficult to decide when a case was suitable for operation. For a long time the disease did not extend beyond the œsophagus. Excision of the carcinoma was a practical proposition, and it was not unreasonable to hope that the history of the surgery of the other organs might be repeated in the case of the œsophagus.

Discussion.

Mr. H. S. SOUTTAR disagreed with Mr. Steward's criterion of operability—namely, that there should be no secondary growths. How often did one find a secondary growth within a year of the origin of carcinoma of the breast? How many cases of carcinoma of the œsophagus survived a year? He went through the records of 18 post-mortem examinations of such cases at London Hospital, and in each it was evident the growth had reached an inoperable stage, for inside the thorax and around the œsophagus the condition was chaos. The patients had died soon after entering the hospital, some of them from gastrostomy. The average duration of their symptoms had been 4·7 months. Mostly, when these cases were first seen by the surgeon, they were already in the penultimate stage. With regard to the statement that better results would ensue if patients were seen earlier, it must be remembered that a man who could not swallow came for advice at once. Some cases had come to him within a few days of the onset of their troubles, and the œsophagoscope revealed a condition which was staggering. Some died before they had any œsophageal symptoms. He contended that in the vast majority of cases by the time the surgeon saw the case operation was out of the question; it was not worth attempting. Most of the cases, in men, were between the ages of 65 and 70, and were bad operation subjects. In the decade 1911–20 16,000 deaths were reported to have occurred from this particular disease in England and Wales; and in the last 30 years three instances of cure had been reported. But were they cured? Was it a cure to have portion of the œsophagus removed and not to be able to swallow?

Mr. Souttar then dealt with the question of relieving these patients and enabling them to eat meals by means of tubes. Hitherto, he said, intubation only aimed at enabling the patient to swallow fluids, and he thought that if larger tubes were used solids such as passed along after proper mastication normally could be negotiated. First, œsophagoscopy must be carried out, and he had had the ordinary œsophagoscope modified so as to carry tubes of varying sizes. Each diameter tube he used was supplied in lengths of 10, 14, and 18 in. In the average male the tubes passed easily. No attempt should ever be made to pass a tube without the aid of the œsophagoscope. He used a modification of Jackson's bougie, as it enabled a view of the tip to be obtained, and it could be passed into the small opening of a stricture. After the stricture was once passed it could easily be opened up, until 11 mm. in diameter was achieved, then a tube of reasonable diameter could be introduced for the purposes of feeding. These tubes were made of German silver wire, in a spiral, which prevented their regurgitation. The tubes seemed to give rise to no trouble, and the immediate result was very satisfactory. Usually the tube was inserted one afternoon, and nothing but water was taken that day; then next morning it was possible to take a breakfast of eggs, fried bread, bread-and-butter, and coffee, while for midday pounded fish and potatoes could be taken. In 26 cases which he had followed up after intubation the average duration of life was 5·3 months. The disease was very relentless, and if a man of 70 years of age could be enabled to swallow a meal in this way it was a very important matter to him. Still, he hoped with others that in a small percentage of the cases it would be possible at a future time to resect the growth with a prospect of cure.

Mr. WALTER G. HOWARTH said he had seen hundreds of cases of cancer of this region, and he had tried all the recognised means of dealing with them, particularly by the radium treatment of the œsophagus, not only with small doses, repeated at intervals of six weeks or so, but by the intensive treatment of Guisez. Looking back, he confessed to a feeling of profound disappointment concerning radium treatment for this disease. He had also, more recently, used diathermy for these cases, but it was difficult to provide a proper electrode; the best he knew was that invented by Mr. A. J. Wright, of Bristol. Diathermy, however, only dealt with the superficial part of the growth, it impinged on the lumen of the œsophagus, whereas many of the growths were intramural and involved the œsophageal wall secondarily. His conclusion was that Mr. Souttar's method was probably the best available at present for dealing with these cases, enabling the patient to live a more comfortable life and take food with some satisfaction. Without such measures many patients could not swallow even liquids, and their saliva was a constant source of intense misery. He had used Mr. Souttar's tubes from the time that gentleman first introduced them, and he gave an account of his experiences with them. With regard to attacking the carcinoma externally, he, the speaker, had removed an œsophageal carcinoma from the upper end of the œsophagus, and brought up the œsophagus to join the cut end of the pharynx to it. That patient was still alive, two years after the operation. There remained a marked cicatricial stricture at the line of suture, but through the minute aperture the patient managed with fair comfort. As to the removal of carcinomata of the middle of the thorax, it was very difficult to say what would be an operable case and what would not, and what was its lower limitation; bismuth meals followed by X ray examination did not help very much. When one of Mr. Souttar's tubes became blocked, small drinks of hydrogen peroxide and water, and abstinence from food for a day, usually resulted in a clearance.

Mr. A. L. APEL attributed great importance to dealing with the teeth of these patients before attempting operation, especially for pharyngeal and upper œsophageal growths. He had seen cases in which at first operation seemed out of the question, but when the patient had been rendered edentulous the growth decreased remarkably. At the Cancer Hospital gastrostomy had been done in a very large number of cases, all under a local anæsthetic. In none was there an immediate mortality, nor the development of broncho-pneumonia. It was simple to measure the extent of the growth in these cases. The patient was placed either on his right side or in the Trendelenburg position, and while so suspended he was given an opaque drink, and the X ray plate was exposed during the act of swallowing, and another when the meal came to a standstill. If the growth was not more than an inch in extent and had not grown into the wall of the œsophagus, probably it was in an operable condition. He had operated upon three cases through the posterior mediastinum, by the method originally suggested by Mr. Wilfred Trotter. One, which he related, lived 11 months, and with no more inconvenience than that caused by continual dilatation. Gas and oxygen, under considerable pressure, was the anæsthetic employed, and the wound in the thorax was closed in an air-tight fashion, so that the lung was never collapsed afterwards. In eight cases he had used the Souttar tubes; three had an œsophageo-tracheal fistula in a fortnight, four swallowed the tubes straight away, and one formed a mediastinal fistula. He made a strong plea for further attempts to really cure this condition. Patients went to their own practitioner, to a physician, or to the nose and ear surgeon, and by the time the surgeon was called it was time to have a gastrostomy. If nothing was done until patients had difficulty with soft solids progress would not be made.

Mr. T. B. LAYTON expressed his agreement with the contentions advanced by Mr. Souttar, except that in the case of a fairly young patient with this disease, otherwise fit, it was worth while to see what operation would do for him. He also agreed that it was always wisest, before doing anything, to render the patient edentulous.

Mr. E. D. DAVIS pointed out that the early diagnosis of carcinoma of the œsophagus was a very difficult matter, especially as dysphagia was often a very late symptom. He had done 70 or 80 œsophagoscopy examinations for carcinoma, and only one of the cases looked like an early one; all the others were advanced, and they died within eight months. He had had a few cases in which Mr. Souttar's tubes proved successful, and in those the growth was in the middle of the œsophagus. If the cancer was at the cardiac end of the œsophagus, it was difficult to place the tube, and one could not be sure whether or not there was coexisting carcinoma of the stomach. The tube was not very successful for them.

The PRESIDENT congratulated the Section on this discussion. His own experience of the disease, from the standpoint of cure, was somewhat gloomy; he would like to share the enthusiasm felt by Mr. Steward and Mr. Abel, and they were probably right, for in regard to the surgery of other organs there was at first a gloomy outlook, until some pioneer came along and, by his keenness, showed what could be done. If improvement was to come in regard to this serious disease there must be earlier diagnosis. He agreed that early in the condition only in a few cases was there any noticeable difficulty in swallowing. On talking to patients after the disease developed it was easy to ascertain that some time before they sought advice they had been conscious of vague pains in the chest, perhaps with a feeling of pressure on the sternum, which were attributed to "indigestion." Who would go to a surgeon, even to a practitioner, for that? He had had no personal experience of Mr. Souttar's tubes, but he had seen many tubes used, and there seemed to him to be something essentially unsound in endeavouring to dilate a carcinomatous stricture. If a foreign body was in close contiguity with a carcinomatous surface, there must be irritation, and from that there would be inevitable reaction. Still, there was undoubtedly

relief of the swallowing difficulties. He was glad of the agreement that the best palliative treatment was provided by gastrostomy, even though the mortality from it was high, which was largely because it was done on every kind of case. Prejudice existed against that operation, not only among the public, but in the profession; doctors said they would rather die than have it done on themselves. In saying that, only the standpoint of the healthy man was being expressed. From the humanitarian point of view, he thought gastrostomy had a great value. He agreed it was the rule for a squamous epithelioma to remain localised for quite a long time; the disease in the œsophagus spread more by contiguity than via lymphatic channels; even in late cases there was not a great deal of glandular enlargement. Patients of his with this condition had never lived beyond two years after the disease was discovered, he could not equal Mr. Steward's five years. He had every admiration for the attempts being made to deal with this disease surgically and with the cure of the condition always in mind.

Reply.

Mr. STEWARD said he had not used Souttar's tubes. Their success in the originator's own hands showed what could be done by intubation in inoperable carcinoma of the œsophagus. He did not himself suggest that every case should be operated upon; but there existed cases in which the growth could be diagnosed while yet it was limited to the œsophagus and in the absence of any signs of secondary deposits. He maintained that if gastrostomy was done early, the patient would lead a comfortable life, more comfortable than if he were wearing a tube. The reason the operation had a bad record was because it was so often used as a last resort for patients in danger of dying of starvation.

SECTION OF OTOLOGY.

THE first meeting of this Section was held on Nov. 6th, when Dr. DAN MCKENZIE, the new President, occupied the chair and opened a discussion on

Diseases of the Outer Ear.

He dealt with certain forms of dermatitis which interested the aurist clinically either because of a difficulty in diagnosis or because of a resistance to treatment. The external auditory meatus was, he said, the only skin-lined cul-de-sac in the body, and it might be the function of the cerumen to ensure the removal from it of the shed epidermal scales, which might otherwise cause symptoms by their accumulation. Furunculosis was a common as well as painful condition, and usually it could readily be diagnosed from mastoid suppuration by the painful swelling of the meatal wall, the tenderness of meatus and auricle, the obliteration of the auriculomastoid sulcus, and the absence of tenderness when compressing the mastoid. Yet cases occurred which presented difficulty in this regard. Sometimes furunculosis, by extending backwards, caused a subcutaneous mastoid abscess closely simulating one due to mastoiditis. The patient might have had previous attacks of middle-ear suppuration, and the membrane might be obscured. Diagnosis must in such cases be postponed until the abscess had been opened. Sometimes, also, simple œdema over the mastoid process might be associated with what seemed like true mastoid tenderness, and it was not clear whether mastoid suppuration was associated with the furunculosis. In such cases the safest course was to open the mastoid process and make an examination. His experience with vaccines for furunculosis had been very variable, and he asked the views of members on the point, and what effect they found from the intramuscular injection of manganese collosol. Sometimes a meatal furunculosis started a spreading dermatitis, and even a cellulitis of the neck and face. Desquamative external otitis was a condition in which the epidermal lining of the canal was in a sodden condition and was shed in continuous sheets, giving the appearance of a cholesteatoma in the antro-tympanic region. It was usually confined to the bony meatus deep to the isthmus. If this condition lasted it caused absorption of bone and dilatation of the deep meatus. The removal of this pultaceous material was, owing to the pain, tedious and difficult, especially when the walls were ulcerated in addition. Syringing was not usually efficacious, and the material must be removed piecemeal by the aid of a spud. Otomycosis was another condition met with not rarely, the aspergillus being the commonest, the mucor mucedo a rarer form. There might be no symptoms until the Malpighian layer of the cutaneous lining was reached. Neglect sometimes led to ulceration. Primary diphtheria of the external meatus had lately occurred in London, and was said to be not uncommon. The chief symptom was severe pain, and a serous discharge was present. In the two cases of it which the President saw the diphtheritic membrane adhered to the deep meatal wall and to the intact tympanic membrane. Diagnosis of the disease was arrived at from culture, and both cases cleared up after one dose of anti-diphtheritic toxin. Constitutional symptoms were absent. An infrequent meatal affection was syphilitic condyloma. In this condition the conchal edge of the canal presented a number of small red papules with linear excoriations, and a painful discharge. Chronic eczema of the meatal lining was often very obstinate, and the help of the dermatologist would be welcome in regard to it, as it was sometimes attended by difficulties of both diagnosis and treatment. It was necessary to exclude suppuration of the middle ear, which might be the cause of the infiltration. When the meatus alone was to blame the discharge was never purulent. Sometimes chronic eczema of the meatus and auricle was of seborrhœic character, and then the scalp would be found to be also involved by it.

Dr. A. M. H. GRAY read a paper entitled Common Affections of the Skin of the Outer Ear. He said inflammations of the skin were reactions to the action of irritants, those reactions only differing in the case of the ear owing to the position and character of the skin. Dermatologists now classified skin affections according to their causative factor, rather than according to their clinical appearances. Many different irritants caused similar reactions, and in some cases the irritant answerable could not be traced. Two kinds of eruptions had to be dealt with, those more or less specific to particular irritants, and, secondly, those due to varying types of irritants, which could, therefore, be spoken of as group reactions. Eczema was a term he applied to a superficial serous inflammation of the skin, which varied according to the irritants applied, or according to the sensitiveness of the particular skin being dealt with, there being present no characteristic by which the causation could be determined. If the kind of irritant was evident, such as solar rays, it was named solar dermatitis, not solar eczema. There could be no doubt as to the great value of X rays in the treatment of chronic inflammatory lesions, whether caused by a septic organism or by causes not yet known, also in conditions due to definite chemical or physical agents. The rays should be given in small doses. The same treatment was of great value, too, in chronic fibrous thickenings about the ear. But when a very acute inflammation was present, or pus formation was in progress, the rays should not be used. X rays should not be applied over long periods for the chronic conditions referred to. In his experience, the best results followed three or four doses of ½ Sabouraud pastille at weekly intervals. If a further treatment at the end of two months did not cure the condition it was probable that the limit of efficacy of the rays for that particular case had been reached. He did not see why an instrument could not be devised which would make possible the safe local application of X rays to the depth of the meatus. Very probably small doses of radium would be also efficacious for the same conditions as X rays benefited, but he did

not know of it having been tried. Furunculosis of the meatus was, he thought, probably due to a lowering of the resistance of the skin to staphylococcus. Sabouraud concluded from investigations he made that it was useless to give vaccines in cases of superficial folliculitis, but that they might be useful in perifollicular abscess cases in which the organisms had passed outside the follicle. The speaker, however, did not quite agree with that authority, because he thought another factor must be considered, and it was questionable whether giving vaccines subcutaneously was a satisfactory treatment of these conditions. Mostly boils were a recurring condition, and the sufferers from them had a staphylococcal hypersensitiveness; desensitisation could not be carried out by giving subcutaneous injections of an antigen, it must be given intradermically in very minute doses. Dr. Gray dealt with a number of other skin conditions.

Dr. F. C. ORMEROD read a short paper on Intractable Dermatitis of the Pinna and External Auditory Meatus which was secondary to chronic suppuration of the middle ear. The paper was based on 33 cases in which inflammatory conditions of the external ear followed suppurative otitis media of from eight to ten years' duration. The treatment followed was the use of various pigments and ointments, such as calamine, mercury, and flavine. In cases of stenosis subitol was used, but this was contra-indicated when eczema or fissures were present. Among the paints used were silver nitrate in water, silver nitrate in spirit, ether nitric, and salicylic acid in liquid paraffin.

A general discussion followed.

Mr. F. J. CLEMINSON read a paper on

Deafness Associated with Fragilitas Ossium

and showed a patient with the condition, a young woman aged 23, who had been deaf since she was 13 years of age, and had recently been getting worse. No specific disease could be held to be the cause, and the onset had been very gradual. She had broken her right arm three times and her leg once. There was a deformity of the face, due to a depression of the left maxilla from before backwards, dating from birth. Her sclerotics were of the greyish-blue colour usual in the condition.

This paper was also fully discussed, as were a number of interesting clinical cases.

SECTION OF LARYNGOLOGY.

A MEETING of this Section took place on Nov. 5th, under the presidency of Dr. ANDREW WYLIE.

Effects of Nerve Anastomosis on Vocal Cord and Diaphragm Movements.

Sir CHARLES BALLANCE gave a cinematograph demonstration of some experimental work which he had been doing, in conjunction with Mr. LIONEL COLLEDGE, showing that paralysis of vocal cords and diaphragm could be cured by anastomosing the recurrent laryngeal nerve with the phrenic nerve. The subjects of the experiment were a dog and a monkey. In the dog, on its right side the phrenic root from the sixth cervical was divided and an end-to-end union of it effected with the recurrent laryngeal. On the left side the trunk of the nerve was completely divided, and then united end-to-end with the recurrent laryngeal. To prevent diaphragmatic palsy, he divided the descendens noni and united its proximal cut end to the distal cut end of the phrenic. The film showed the cords now in full and vigorous movement, and the diaphragm had recovered its contractility. In the case of the monkey, on the right side the cut end of the recurrent laryngeal nerve was united to the side of the phrenic, while on the left side the phrenic nerve was divided and its proximal cut end was united to the distal cut end of the recurrent laryngeal. Every time the operation had been done on animals it was a success, and the research showed that one could cure paralysis of the muscle of the diaphragm by uniting the phrenic to the descendens noni, and cure paralysis, or threatened paralysis, of the depressor muscles of the hyoid and larynx by making an end-to-end union of the cut end of the descendens noni with the lower side of the hypoglossal nerve.

Dr. E. B. BARNES (Northampton) related a case in which Sir Charles Ballance did this operation of union of recurrent laryngeal to phrenic. The patient was a lady aged 52, who sustained an operation on the thyroid in 1925, and following it had aphonia and very severe dyspnœa. Last June Sir Charles Ballance anastomosed the recurrent laryngeal to the phrenic on one side; and about a month later the other side was similarly dealt with. At the present time the patient had well-marked movement of the right cord, and on the left side the arytenoids could be just seen. There had ensued recovery of the diaphragm on both sides.

Sir DAVID FERRIER, who had witnessed the operations and the gradual return to normality, paid a high tribute to the skill of the operations and the significance of the investigation.

HARVEIAN SOCIETY.

THE MANAGEMENT OF CONTRACTED PELVIS: DISCUSSION.

A MEETING of this Society was held on Nov. 4th, Mr. LAMING EVANS, the President, in the chair, when Mr. A. W. BOURNE read a paper on this subject, which is printed in full on another page.

In the discussion that followed, Mr. EARDLEY HOLLAND said that he never did Cæsarean section on the "failed forceps" case; he always perforated. To perform Cæsarean section was gambling on two risks—the chance of infection and the chance that the fœtus had received some injury. Cerebral hæmorrhage in a fœtus in utero produced no visible effect; the heart went on beating, but a possible result of Cæsarean section was a child in white asphyxia which could never be resuscitated. Cerebral hæmorrhage caused respiratory paralysis, and the life of the fœtus in a failed forceps case was not of any value. Of those patients with slight pelvic contraction who were deliberately allowed to go into labour, 80 per cent. delivered themselves or were delivered with a very easy application of forceps. A normal pelvis was constructed to transmit a 7½ lb. baby, but could in most cases allow the passage of an 11 lb. child; it was, therefore, not unreasonable to expect a slightly contracted pelvis to deal with a normal fœtus. Since considering this "reserve capacity" of the pelvis he had largely given up induction of labour. Many obstetricians seemed to be afraid of the "test labour." He had studied the results of induction in his own hospital, judging its necessity by the length of the second stage and the degree of moulding, and concluded that 80 per cent. of the inductions in contracted pelvis were unnecessary. The difficulty of selecting cases for induction was very great; it would be better to set to work and find out how to tell during labour whether a given head would go through or not. To allow moderate cases of contraction to go into labour demanded a much higher standard of midwifery, but was a better course of action. The fœtal and early neonatal mortality of induction cases was 12 per cent., and if the children were followed up to the end of the first year it would probably be higher. He regarded induction for post-maturity as most meddlesome midwifery; it was impossible to tell when labour was really due. Each fœtus should be judged by its size compared with that of the pelvis.

Mr. CLIFFORD WHITE said that he strongly believed in induction. No patient was interested in what happened in 80 per cent. of cases of induction; she wanted to know what was going to happen to herself, and no husband would appreciate a "test labour" on his wife. In these days of late marriages the first labour might well be the last, and, moreover, if the

first were made very difficult the patient might see to it that she never had another. It was the duty of the obstetrician to see that the first delivery was easy and swift. If he found that the head was not well into the brim at the thirty-sixth week it was his custom to see the patient again at the thirty-seventh and, if it would not engage, to prepare for induction, and also to induce labour in any multipara who was ten days over time. The fœtal mortality was not considerable if the baby could be given careful attention. It was a good thing for the doctor not to carry axis-traction forceps with him, as if the head were high he could counter the protests of the relatives by saying that he must fetch or send for special instruments. By the time they came the head would probably have moulded through the brim. "High forceps" were to be avoided if any process of delay would make it possible. If they were used friends should be told that the manœuvre was to enable the patient to deliver herself more easily, then if it appeared that strong traction would be needed to deliver she could be left to deliver herself without causing domestic trouble. An irritated uterus often resulted from repeated intra-uterine manipulations and was apt to be mistaken for tonic contraction, which was, in fact, very rare. The irritation would subside after morphia and an hour's rest. He agreed that self-delivery was the best method after craniotomy and that craniotomy forceps were very dangerous. He would never do a Cæsarean section if forceps had been applied, and did not like it after a "trial labour." Cæsarean hysterectomy was useful for elderly primiparæ when the uterus was probably infected.

Dr. G. DE BEC TURTLE agreed that very few cases of severe contraction were encountered in general practice, the commonest form being the "generally contracted." Walcher's position was of some value in increasing the size of the outlet. The post-mature child was not uncommon and was better induced. The high forceps operation was very difficult; when it succeeded it was best to remove the instruments after bringing down the head and then leave the patient to deliver herself.

Dr. J. THORESBY JONES remarked that out of thousands of cases he had attended he had only had two or three where operative assistance had been necessary.

Dr. W. JAGGER said it was strange that our crass ignorance of midwifery should produce such fortunate results; experts still differed as to the best time and means for interference. The patient herself was generally willing to go on for a time if her pains could be made tolerable, but the anxiety of relatives had to be appeased; cases in practice were not purely scientific. In his opinion early interference was likely to do harm, and it was better to give morphia and wait.

Prof. LOUISE MCILROY agreed that in practice the husband was the chief indication for forceps. She had found morphia most valuable, as in addition to relieving pain it helped to dilate the cervix. She did not agree with Mr. Eardley Holland about induction, and asked what the results were when induction was not performed. In her series of some 6000 hospital cases she had found that Cæsarean sections were gradually disappearing since the use of induction for disproportion. Out of this number only 4·27 per cent. had been forceps cases and there had been no craniotomies. High forceps should never be applied. Imperfect flexion of the head was the cause of most of the maternal damage and fœtal mortality. She induced every post-mature case and the results were good. She regarded the whole discussion as really out of date, since all the cases considered should have been recognised before labour. The vital factor was not a skilful obstetrician at the time of labour but good antenatal care.

Mr. BOURNE, in reply, said that although ideally the treatment of contracted pelvis in labour should be out of date, it was not so found in fact in obstetric hospitals.

MEDICAL SOCIETY OF LONDON.

THE meeting of this Society held on Nov. 8th under the presidency of Sir HUMPHRY ROLLESTON was given up to a discussion on

STERNAL PAIN.

Dr. JOHN PARKINSON said that some might prefer the term substernal, others might choose retrosternal, but the actual words were not of much moment if it were agreed that the patient in complaining pointed to the sternum or passed his hand directly across it. The notion held by the patient as to the depth of his pain seldom gave the physician guidance of any value. He preferred to speak of sternal pain rather than precordial pain, as the latter often merely meant that the pain was felt in the region of the heart, and the apex beat was usually meant. In making a note of symptoms it was better, he thought, to speak of sternal pain, left supramammary pain, and left submammary pain. The thorax, contrary to the abdomen, contained only a limited number of organs. The lungs, being lateral organs, were more likely to give lateral pain, as in pleurisy. Acute tracheitis or bronchitis produced a characteristic soreness behind the sternum. On inspection there might be evident a swelling, a tuberculous abscess, or a pulsating swelling such as a pointing aneurysm. Less frequently this swelling would be found to be a gumma, secondary malignant disease, or a lymph granuloma. Intrathoracic tumours were likely to give other symptoms in addition to sternal pain. In acute pericarditis there might be pain and discomfort, or it might be absent. In early infective endocarditis there might be pain at the lower end of the sternum. In chronic valvular disease, if rheumatic, there was seldom felt more than an aching or a discomfort, and usually the situation of this was below the left breast. Patients with heart failure who persisted in walking about might complain of a feeling of pressure at the lower end of the sternum or in the epigastrium; this pain was worst when they did walk, and this was found to be due to a congestive distension of the liver.

The most important form of sternal pain was that produced as the main or sole symptom in a particular group of cardiovascular diseases. If this pain had a direct relationship to effort, it always meant serious cardiac disease. The degree of the pain varied. It might be discomfort or a definite gripping pressure, though rarely the constriction seemed to encircle the chest; the pain was mostly in front, at the mid-sternum or the junction of middle and upper sternum, its area seldom exceeding the width of the hand. The pain might overflow down the left arm and reach the wrist; there might also be pain in the shoulder, jaw, and neck. Usually this pain ceased when exertion stopped. With advancing disease even slight exertion, such as dressing and undressing, might start the pain. This close relation to exertion almost infallibly pointed to the pain being cardiac. Nervous patients rarely included the sternum in their descriptions of the pain they felt; they spoke of an aching below the left breast. If this was persistent and severe it extended upwards to include the left supramammary region.

Dr. Parkinson said they had been asked to believe that angina pectoris was a disease, yet the greatest authorities had differed in their statements as to its pathology, and even as to the organ involved. The speaker therefore counselled considering it as a symptom. Sternal pain cases would include the vast majority of those of angina, but admittedly angina pectoris might be manifested as a left supramammary pain, extending into the arm and not including the sternum, though this was so in only a minority of instances. Submammary pain alone was practically never indicative of angina. With those exceptions, the speaker thought the earliest and most diagnostic symptom of angina was sternal pain which was felt on exertion. Some thought the term angina should be restricted to cases in which the attacks were strictly paroxysmal.

When the physician had decided that a sternal pain was cardiovascular in origin, he had not reached a proper diagnosis. The disease was cardo-aortic, and what remained to be decided was what particular disease of heart and aorta was operative. It was usually one of four, which could generally be recognised. First, syphilis of the heart and aorta, which was a common cause of sternal pain in men of 35 to 50 years of age, and in them a positive Wassermann, or perhaps a clear history of syphilis, would settle the diagnosis. A blowing aortic systolic murmur, and still more a diastolic, or an accentuated aortic second sound, in the absence of other causes for this, was highly suspicious of syphilis. Sudden death was not unusual in these cases. Still, by treatment, especially early treatment, there was reason to hope for a cure. The second condition was atheroma of the aorta and coronary arteries, and this was a commoner cause of sternal pain than syphilis, partly because sternal pain was more common in elderly people. Though the brachial and radial arteries might be hard and tortuous, the blood pressure might be nearly normal. Diagnosis of this from arterio-sclerosis was largely a process of exclusion. The prognosis was uncertain. In the absence of complications such as cerebral arterial disease, coronary thrombosis, or congestive cardiac failure these patients might live for years, and suffer more from their general disability than from the pain itself. A subdivision of the last-mentioned group was coronary thrombosis, the recognition of which was largely due to American workers. Subjects of this were rarely syphilitic, and nearly always the basis of the condition was a coronary atheroma. The attacks of coronary thrombosis were what were formerly called the status anginosus. So severe and prolonged might this pain be, and so distinct the accompanying shock, that it simulated in many cases acute abdominal conditions, and hence had a surgical interest. This condition had been mistaken for perforation of a gastric or a duodenal ulcer, and for acute pancreatitis. Often apart from any exertion —sometimes in the middle of the night—these patients might have severe angina pectoris, but it did not seem to the practitioner to harmonise with angina pectoris because the pain was too prolonged and had accompaniments which were foreign to true angina, such as a fall in the blood pressure, sweating, and vomiting. Ordinary cardiac failure might supervene, with dyspnœa, and even swelling of the liver and physical signs in the bases of the lungs. In coronary thrombosis the pulse was often notably affected. He thought there had not yet been given due recognition of the importance of coronary thrombosis; it was, indeed, the first step in the logical subdivision of angina pectoris into a number of classes, as the present position and classification of the subject could not be regarded as satisfactory. The fourth category he had to mention was high blood pressure. A small proportion of patients with high blood pressure complained not so much of dyspnœa as of sternal pain. Presumably the coronaries were first affected. In sternal pain from high blood pressure the prognosis, in regard to the danger of sudden death, might be considered to be better, but it must not be assumed that these patients would live longer. No examination could nowadays be held to be complete in chest cases unless the radiographic and cardiographic was included. The inaccessibility of the thoracic aorta to ordinary clinical examination was not yet recognised, but X rays could give valuable information as to heart enlargement, while the electrocardiograph gave increasing information about the state of the myocardium, of which the coronary arteries were the servants.

Summing up his thesis, Dr. Parkinson said that sternal pain coming on with exertion was usually due to cardio-aortic disease, and if severe and prolonged, even apart from exertion, it usually indicated coronary thrombosis. Sternal pain was not synonymous with angina pectoris, but it could be held to include most of the cases so-called. The diagnosis might be completed by deciding what pathological lesion was the cause of the pain. If the use of the term "sternal pain" or "cardiac pain" were more general, even at the expense of dropping the term "angina pectoris," he thought it would result in an earlier, perhaps a more certain, diagnosis of cardio-aortic disease.

Mr. A. J. WALTON then made the communication on the surgical diagnosis of sternal pain which appears on p. 999 of our present issue.

Discussion.

Sir JOHN BROADBENT said that 30 years ago cases of angina pectoris were always attributed to "fatty heart." Now many thought there was no true case of angina which was not associated with coronary sclerosis. Sir James Mackenzie, however, said that it was due to a failure of contractility, and that had been the speaker's own experience. In the cases of very large hearts associated with valvular disease there was seldom cardiac pain, and the anginal pain was invariably associated with exertion. There were two definite classes of cases. The heart issued a signal of distress because it was faced with a call for effort it could not give, and this inability might arise either from coronary sclerosis or from inability to supply the blood needed to deal with the situation. He had seen cases in which, in the absence of syphilis, by giving attention to the mode of life and taking matters easily, there had ensued a good recovery and a further 10 or 15 years of life. But the cases of the kind in which there was a positive Wassermann reaction were, in his experience, almost invariably fatal. He had seen cases in which there was gastric pain definitely related to the taking of food, and the seat of intense pain was the sternum. There was no more difficult class of case to give a prognosis upon than that of sternal pain, because of the variety of more or less obscure conditions which might give rise to it.

Dr. A. BLACKHALL MORISON said the only cases pertinent to the present discussion in which there was danger of unnecessary surgical intervention were those in which there was a sudden attack of coronary thrombosis, for there in addition to its suddenness, the pain was usually central and epigastric. These cases always seemed to be fatal. It was remarkable how few heart cases had been thoroughly examined post mortem; often if one structure was investigated, another was omitted from the survey. He thought it was not so much blood pressure as the blood stroke which induced the attacks of angina, and his habit had been to divide anginal cases into direct and indirect.

Dr. E. P. POULTON referred to cases in which the pain was of a dyspeptic character, and was produced in the œsophagus from mechanical causes. The heart, he thought, had the power to produce similar reflex pain in the œsophagus, and this would, perhaps, explain the belief of one authority that all cases of angina pectoris originated in the œsophagus. The pain of heart-burn could be shown to disappear with peristalsis, and some of the pains described in the present discussion were mitigated by the patient swallowing. Examination of the movements of the viscera under X rays after giving opaque food seemed to confirm the views he was advancing. Experiments were made by placing an inflated bag in the œsophagus, and showed that the pain was a tension pain. Contractions were found to abolish pain.

Dr. J. A. RYLE combated the idea that distension of a viscus caused pain. When a diseased stomach, gall-bladder, or kidney become distended, there was usually a lessening of the pain originally present; it was when a hollow viscus was trying to overcome obstruction that pain, the pain of tension, was felt. There seemed good reason for believing that the pain of angina pectoris was of arterial origin, and for saying that it was produced in the coronary arteries. There existed a perfect analogy in the case of so-called intermittent claudication; in both there was pain of great intensity caused by effort and disappearing when rest was taken, and in the latter there was good reason for believing the pain was produced in the artery. When pyloric stenosis caused pain, somatic signs were absent.

Dr. PARKES WEBER agreed as to the importance of subdividing cases which formerly were grouped under

the one term angina pectoris. He suggested that a good working division was into cases due to obstruction in the coronary arteries and those not so due. In the living patient such a subdivision was admittedly difficult, but it could be attempted. He did not think cases associated with syphilis should be put into a separate group. He proceeded to discuss the analogy of angina pectoris with cardiospasm.

Dr. D. M. BARCROFT spoke of cases in which from some simple cause the patient had a feeling as of a gripping at the heart. Mostly these yielded to trinitrin, but he would like to know how they could be dealt with, as these people suffered badly from lack of confidence through fearing an attack.

Dr. W. W. STOCKER referred to pains originating in the stomach which were felt behind the sternum, and related a personal experience.

Sir CHARLTON BRISCOE discussed the various causes which could give rise to the same kind of pain, and showed, by lantern slides, composite charts of seats of pain in various conditions.

Dr. JOHN FAWCETT said that all recognised the various anatomical conditions associated with angina, and their complete absence in some cases, but until some explanation was forthcoming as to why angina pectoris appeared so frequently in one grade of society and hardly ever in hospital patients, there must remain an important region yet un apped. There must be causes at work in the production of angina pectoris which were not covered by present knowledge.

Dr. H. A. DES VŒUX contended that the person most favourably placed for observing angina was the general practitioner. Yet it was seldom the general practitioner had the opportunity of knowing what was the end result of his cases, even when they terminated in hospital, where there were facilities for post-mortem examination. He gave an account of some cases he had encountered.

Reply.

Dr. JOHN PARKINSON said there was much evidence favouring the idea that the myocardium was a possible source of sternal pain. He agreed that the prognosis in syphilitic cases might be very serious. The explanation as to why hospital patients did not have angina pectoris was beyond him, and he had not seen any solution of that fact.

Mr. WALTON said he had found sympathetic nerve division very unsatisfactory as a measure for mitigating the pain. It was his experience that in the early stages of acute dilatation there was a definite severe epigastric pain, which passed when the tension of the muscle ceased.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Oct. 28th, when Dr. C. W. BUCKLEY, the President, occupied the chair, and Dr. H. WARREN CROWE read a paper on the basis and practice of

Vaccine Treatment in Chronic Arthritis and Rheumatism.

He said that the Rheumatism Committee appointed by the Ministry of Health had divided arthritis into :— 1. Rheumatoid arthritis : a general disease occurring in younger people, in which nerve symptoms predominated, and bony changes were inconspicuous. 2. Osteoarthritis : a local disease occurring in more elderly people, general health good, bony changes marked, and usually confined to the larger joints. 3. Arthritis, not classifiable : an artificial group which was put in to help the panel practitioner when confronted with an aberrant case. 4. Gout : from this communication gout was excluded, since it was not amenable to vaccine treatment.

Medical opinion was steadily veering towards the view that fibrositis and chronic arthritis, excluding gout, were microbic in origin. The question that next arose was, What were the microbes involved? Evidence had accumulated to show that these were of two main groups, streptococci and staphylococci. The evidence for the former rested on a great many considerations, perhaps the chief of which was the fact that practically all infective foci contained streptococci. These were essentially of the non-hæmolytic type. The evidence for staphylococci was rather more direct, inasmuch as these organisms were found to grow in pure culture from pieces of bone and tissue obtained from open operations on arthritic joints ; whereas, in a large number of control cultures of bone and other tissues, both normal and diseased, no staphylococci had been found. The staphylococci isolated were of the variety, *Staph. epidermidis albus* ; they had been called by the speaker *Micrococcus deformans*. A. E. Wright had shown that streptococci and staphylococci were the only organisms which could live in blood serum ; it was for this reason that he had called them serophytes. Dr. Crowe suggested that whilst streptococci were the chief infecting organisms in fibrositis and osteoarthritis, and *M. deformans* in rheumatoid arthritis, in the great majority of cases both types of microbes were involved. In this way were to be explained the " arthritis, unclassifiable " of the Rheumatism Committee. This group could be more rationally called mixed arthritis. Theoretically, these diseases should form an ideal ground for treatment by vaccines. Yet medical opinion had been definitely adverse to this form of treatment ; this was not pure conservatism, but was due to the number of failures which had occurred in practice. It seemed to Dr. Crowe that there were several reasons for these failures, and that if steps were taken to improve the technique there was no reason whatever why the vaccine treatment of rheumatism and arthritis should not prove to be a brilliant success.

The causes of failure were, first, that staphylococci had never been recognised as being of importance in these conditions. Secondly, that the streptococci were an extremely diverse group, members of which were not capable of differentiation by ordinary methods. Many of these were so delicate that they required very special media for their cultivation. Also they died rapidly on exposure. These facts accounted for the inefficiency of so many streptococcal vaccines prepared in clinical laboratories. Once recognised, however, these difficulties could quite easily be surmounted. Thirdly, rheumatic patients during treatment might suddenly become sensitive to vaccine. If this were not recognised failure often resulted. Fourthly, there was a mistaken idea that reactions were beneficial. Nothing could be further from the fact. Much smaller doses, therefore, had to be given than those usually employed. Lastly, it had not been sufficiently realised that treatment must be prolonged and most persevering. For these various reasons, then, vaccine treatment had not often given satisfactory results.

The Practice of Vaccine Treatment.

As in all other special lines of treatment experience was required. The speaker suggested that practitioners should take simple cases of mild rheumatism and treat them with stock vaccine. Panel practitioners had an excellent opportunity for doing this. After a certain amount of experience more difficult cases would gradually be undertaken, and finally even the most chronic cripples might be brought into the net. Until plenty of experience had been gained it was inadvisable to give vaccines to acute or subacute actively advancing cases, as in these, uninformed and routine treatment might do great harm.

The question of diagnosis was of importance, because, the disease usually called rheumatoid arthritis often proved difficult to treat when definitely established, but was as a rule easy if treatment was undertaken in its early stages. It was of extreme value, therefore, to be able to recognise the earliest signs and symptoms of the disease. These, it must be remembered, were often superimposed on those of long-standing osteoarthritis. The most significant sign was nuchal crepitus, in the absence of which *M. deformans* infection and therefore rheumatoid arthritis could definitely be excluded. General

symptoms often appeared very early. Paræsthesias (tingling and numbness) might be noticed. Weakness of muscles, especially of the forearms and lower limbs with consequent dropping of the metatarsal arch, were amongst the earliest obvious signs. Small joints were first attacked. A pathognomonic sign was a hypothenar flush. The speaker suggested that these various signs and symptoms might be called the rheumatoid stigmata.

Preventive Treatment.

The question was propounded as to whether it might not be possible to prevent arthritis and the severer forms of fibrositis which were the cause of so much industrial disability. Dr. Crowe believed that this was not only possible but was easy. The three essentials were early treatment by the general practitioner, clinics where the poorer classes could come and receive treatment for nominal fees, and lastly, an educative propaganda inculcating early treatment. In this last clinics themselves would play a very important part. But before these steps could be undertaken it was necessary that the general practitioner should acquire that facility in the treatment which alone would lead to success.

Dr. Warren Crowe's address was followed by a discussion.

MANCHESTER MEDICO-CHIRURGICAL AND OBSTETRIC SOCIETY.

AT a meeting held on Oct. 27th, with Mr. A. C. MAGIAN in the chair, Mr. R. R. KERR read a paper on

Abdominal Tuberculosis in Children.

Surgical tubercle in all its forms, he said, is known to be exceedingly common in Scotland. In the north of England it is by no means so obvious, but in Lancashire, where the climate is hardly ideal for the young of the human race (or for the middle-aged for that matter) it is rare not to find caseous glands in the mesentery in the course of the systematic examination carried out in a modern laparotomy. It is clear from this that tuberculous infections of the abdomen are not only very common, but also that in most instances complete recovery occurs without any symptoms having been noticed. In the great industrial community the way is probably prepared for the disease, not only by the damp and sunless climate, but by the weakening effects of rickets, infantile malnutrition, and absorption from septic teeth—conditions which have been tackled seriously and with a measure of success within the last generation. The problem of the mother who has to follow whole-time work in mill or factory is, of course, still to be solved.

In children, said Mr. Kerr, tuberculous infection usually reaches the bowel in milk or diseased meat. Here it may attack the lymphoid tissue and the Peyer's patches which lie in the lower end of the ileum, setting up localised ulcers, or it may be picked up by this lymphoid tissue and passed through to the mesenteric glands; this appears to be by far the commonest process. At other times it settles in or around the appendix, another lymphoid organ. From the ulcers in the intestines or the infected glands the process may spread to the peritoneum, setting up one of the forms of tuberculous peritonitis. The ulcers of the ileum may simply remain localised to the Peyer's patches in the mucous membrane of the bowel, tending to spread in a circular way around the gut and giving rise to diarrhœa, indefinite discomfort, and wasting. If they heal, the cicatrices tend to form ring strictures and may cause obstruction, but much more often the disease spreads through the bowel, setting up inflammatory fibroses around and matting and adhesion of adjacent coils—the condition known as hyperplastic tuberculosis, in which one or more definite masses can be felt through the abdominal wall. This condition has to be diagnosed from appendicitis and chronic appendix abscess, and it does not require much imagination or much experience in surgical work to know that the two are very frequently mistaken for each other. The tuberculous appendix may appear simply as an inflamed and thickened organ or its surface may show tubercles; but more commonly it is associated with tuberculosis of the cæcum, mesenteric glands, and neighbouring peritoneum, and the whole together may form a matted mass of infiltrated tissue, with small or large abscesses in the later stages. Tuberculous appendicitis often gives rise simply to a vague discomfort in the right iliac region, probably associated with malaise and wasting, and usually without the acute signs which characterise ordinary appendix inflammation.

When the disease affects the peritoneum, continued Mr. Kerr, this membrane becomes irritated and inflamed and exudes a varying quantity of clear rather yellowish fluid which later may become sero-purulent. The peritoneum itself often shows large numbers of small miliary tubercles and tends to become thickened and lose its normal lustre. As in all granulomata there is overgrowth of tissue; the mesentery becomes thickened, dull, and inflamed; its glands are enlarged and often caseous, and the intra-abdominal structures adhere to each other and to the abdominal wall sometimes in such a way as to obliterate the abdominal cavity. All degrees of these changes take place in different cases and the clinical appearances accordingly vary tremendously. For ease of description they are usually depicted in three groups—the ascitic, the fibrous, and the caseating or ulcerating; but these are not clinical entities, and one type merges into another, different symptoms predominating in different cases. In the ascitic form there is a large amount of fluid, usually pale yellow in colour; the abdomen is distended and the child is wasted. This form of the disease is always serious and often rapid in its course, the progressive wasting being accompanied by hectic fever, vomiting, constipation, and sometimes diarrhœa. In the fibrous form there is much matting of the intestines to one another and to the abdominal wall and little or no fluid. The omentum becomes drawn up and thickened (rolling of the omentum), sometimes forming a definite and easily palpable elongated tumour across the abdomen above the umbilicus. The patient in this type is usually not so ill as in the first, and there is a distinct tendency to recover. In the caseating type, in its advanced stages, the abdomen is simply filled with matted intestine and caseous granulomatous material in which small or large abscesses occur. These become secondarily infected from the bowel, ulcerate into the bowel or point through the abdominal wall, forming intractable sinuses and fæcal fistulæ, until the patient eventually dies of exhaustion, usually after a long and miserable illness.

The surgical treatment of this disease, said Mr. Kerr, is by no means entirely satisfactory, and depends largely upon each case being taken absolutely on its merits and also upon the experience and insight of the surgeon. Operation is inadvisable in the early stages where the disease is only suspected or where the diagnosis is reasonably certain by reason of continued malaise, slow or progressive wasting, possibly slight evening rise of temperature with indefinite abdominal discomfort, constipation, and occasional vomiting, combined with an abdomen slightly distended or giving the impression of irregular thickenings. The child should be treated on general lines with rest, open air, nourishing and easily digested food, and carefully graduated exposure to natural or artificial sunlight. Where there is definite ascites, however, it is always advisable to explore the abdomen, let the fluid escape, and deal with any obvious focus found. It is always wise in these cases to remove an inflamed or thickened appendix and to operate specifically for this if the diagnosis can be made. Pointing abscesses should be opened, warning being given of the danger of chronic sinuses and fistulæ resulting. For some curious reason a proportion of these patients do very well after operation, although nothing has been done beyond allowing the fluid to escape.

Where the fibrous changes predominate, said Mr. Kerr in conclusion, operation must usually be

absolutely inadvisable, but even here there are unlooked-for exceptions. About six years ago he was consulted about a youth who was in the advanced stage of this disease. He was wasted and cachectic, and his abdomen was full of irregular masses. He was advised strongly against any operation and sent to the seaside in good weather and conditions, but about two months later his condition had deteriorated and Mr. Kerr's hand was forced, rather against his judgment, by an attack of obstruction. On entering the abdomen with difficulty he found nothing but firmly matted bowel, everywhere adherent to the abdominal wall, and caseous masses of glands. The abdomen was closed and the parents told that the boy could hardly live for more than a few days. From that hour he proceeded to make a recovery which clinically appeared to be complete in about a year, and has remained so. Mr. Kerr found it difficult to draw any moral from this.

Following the reading of Mr. Kerr's paper there was a discussion, in which many members of the Society took part.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

AT a meeting on Oct. 19th Sir HUMPHRY ROLLESTON read a paper on

High Blood Pressure from the Clinical Aspect.

He raised particularly the question whether or not a rise of blood pressure, per se, apart from causal toxic factors or the resulting arteriosclerosis, gave rise to symptoms of ill-health. It was not an uncommon experience, he said, to detect blood-pressure readings higher than the average in individuals who were entirely free from symptoms, and harm might result from too energetic measures adopted for lowering these pressures. Certain hypersensitive subjects, however, might conceivably manifest symptoms as the result of the heightened blood pressure alone. Libman had described a simple means of estimating individual's response to afferent stimuli, and ascribed angina *sine dolore* to the patient being hyposensitive. But to apply this explanation to high blood pressure would necessitate the assumption that in the early stages persons with high blood pressure were hyposensitive and became hypersensitive; possibly as high blood pressure was often due to protein derivatives, the hypertensive individual's nervous system might at some stage become sensitised by the protein bodies and so allow symptoms due solely to the high blood pressure to appear. On the other hand, F. M. Allen and others considered that high blood pressure was always due to underlying structural changes either of the kidney or of an arteriosclerotic nature. Bordley and Baker had shown by post-mortem findings that arteriolar sclerosis in the medulla oblongata was definitely associated with high blood pressure. But it was difficult to believe that such a change could underlie those cases in which a high pressure persisted for years with no advance and without interference with health.

Sir Humphry Rolleston also referred to the possibility of arterial spasm in this connexion, and spoke of work done by Draper on the constitutional make-up of subjects of high blood pressure. Finally, he considered seriatim the various symptoms commonly associated with high pressure cases in their early stages and questioned whether or not these occurred in the absence of definite chemical or structural changes. The tendency to hæmorrhage—nasal, intestinal, retinal, or cerebral—was probably dependent not on the pressure alone, but on vascular degeneration associated with it. Probably each common symptom considered could be explained by the presence of some factor other than the rise of pressure.

In the paper and the discussion which followed, the importance of the distinction between the rise of pressure itself and the associated degenerative changes was emphasised.

Reviews and Notices of Books.

A NINETEENTH CENTURY TEACHER.

John Henry Bridges, M.B., F.R.C.P. By his Niece, SUSAN LIVEING. With a Preface by Prof. L. T. HOBHOUSE, and an Introduction by Prof. PATRICK GEDDES. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1926. Pp. 262. 10*s.* 6*d.*

John Henry Bridges was the son of the Rev. Charles Bridges, vicar of Old Newton in Suffolk, a man of views as uncompromisingly Calvinistic as those held by the naturalist, Philip Gosse, so brilliantly set out in "Father and Son." The atmosphere of the vicarage was repressive; in Miss Liveing's amusing words "the responsibility for their children's souls lay heavily on the parents, and one is left wondering how the roots of grace took hold at all, so sedulously were they pulled up to look for signs of growth." Luckily for John Henry Bridges, his uncle, the Rev. Charles Torlesse, vicar of Stoke, was of a different school, and when staying with the Torlesse family the boy's character had opportunities to open up. In 1845 Bridges went to Rugby under Tait, later Archbishop of Canterbury. Here he did well, and in 1851 proceeded to Wadham College, Oxford, with a scholarship. At Oxford he came particularly under the influence of Richard Congreve, a man of advanced opinion of the sort that would have filled Bridges's father with horror, and among his fellow undergraduates were two brilliant men, Edward Spencer Beesly and Frederic Harrison, both of whom counted in their friend's development. Congreve was a friend of Comte and a passionate advocate of his teachings. These three young men, together with George Earlam Thorley, who afterwards became Warden of Wadham, formed a small brotherhood which came to be the foundation of the Positivist Society in England. At this juncture fate dealt hardly with Bridges, he was expected by all to obtain a First Class in Greats, but by one of those turns of fortune, of which the Oxford class lists can show curious examples, he was placed in the Third Class, although one of the examiners said that he was "the ablest man in." This reverse shaped his future. He could no longer stay permanently in Oxford; he was intended for Holy Orders but felt that they were not for one with his religious opinions, and he turned to medicine, assuming, apparently, that a career of scholarship had been closed to him. One year remained during which he was a scholar of Wadham and he stayed in Oxford reading mathematics and science, and writing the Arnold Prize Essay entitled "The Jews in Europe During the Middle Ages," which gained him a Fellowship at Oriel College. But this success did not lead him to change his intentions of becoming a physician.

In 1856 he entered at St. George's Hospital, where he did brilliantly, taking the M.B. Oxford and the M.R.C.P. in 1859. In the following year he married his cousin, Susan Torlesse, and having previously determined to emigrate to Australia, they sailed in March, 1860, and on landing at Melbourne in June, Bridges started to practise. Then fortune dealt him another blow, for by the end of December Susan Bridges lay dead from typhoid fever and her striken husband returned to England bringing her body with him for burial at her father's church at Stoke. Keeping to the purely medical side of his life, Bridges now, and mainly for family reasons, determined to settle at Bradford and practise as a physician. He was elected almost immediately physician to the Bradford Infirmary and plunged into the industrial and sanitary problems of the day, which certainly were crying out for solution. They were briefly set out by Charles Kingsley at this date, in his lectures "The Roman and the Teuton," in which, speaking of the loss of life caused by the barbarian wars, he says "we have no right to blame those old Teutons, while we are killing every year more of Her Majesty's subjects by preventable disease

than ever they killed in their bloodiest battle." For seven or eight years Bridges laboured at sanitary difficulties and strove to combat the distress caused by the cotton famine of 1863 and the prevailing lack of decent housing. In 1869 he married as his second wife Mary Hadwen, whom he had known from a child, and in the same year he was offered the post of factory inspector for the North Riding. He held this post for a few months only, but this short time was enough to assure him of the evils of female labour in factories, and to win for his position as a sanitarian and reformer wider notice. Goschen asked him to act as locum tenens for one of the medical inspectors of the Poor-law Board, and when this officer's illness prevented his return the post was offered to, and accepted by, Bridges. Shortly afterwards Bridges became closely connected with THE LANCET. The scandals of Poor-law relief and the crying need for reform in the management of Poor-law infirmaries had been shown up in our pages in 1866 in uncompromising terms, and Bridges was in close touch with those who wrote the scathing reports. Large improvements were promised, and some were slowly carried out, it being through Bridges mainly that they materialised, for he never ceased by unceasing vigilance, by persuasion, by conciliation—if driven to it by stern insistence—to see that the reforms were carried out. For 22 years he laboured at a grand task of reconstruction, and when he resigned his post in November, 1892, he had lived to see as the fruit of his labours five fever hospitals in London and excellent Poor-law infirmaries, while the election of women guardians was established. It was a great record.

Bridges died in 1906 after occupying the last 14 years of his life partly in working for Positivism and partly in literary pursuits. His edition of the Opus Majus of Roger Bacon was undertaken at the request of the Clarendon Press, and he had every qualification for the work except one, and that an important one—namely, expert knowledge of palæography, giving ability to decipher manuscripts. During the progress of his edition a new MS. was discovered, of which he was left unaware, and as he failed to decipher correctly certain MSS. to which he had access, he was charged, on the appearance of the work, with being slipshod and unscholarly. He met the charge as a man of his honesty and passionate love of truth would. He had the new MS. photographed and transcribed by an expert palæographer, and brought out a new edition of his work with all necessary corrections. This was published in 1900, and was in every way worthy of the great Franciscan, but the errors entailed upon Bridges both labour and vexation, and he felt the shock to the end of his life.

We confine this notice to the medical and scientific aspects of Bridges's career, but he was equally well known as a preacher of Positivism, as an ardent leader against oppression in any form, as a burning critic of his country's political attitude on more than one occasion, and as a passionate advocate of the under dog in every form.

MODERN TREATMENT OF GENERAL PARALYSIS.

Der heutige Stand der Behandlung der progressiven Paralyse. By Dr. LADISLAUS BENEDEK, Professor in the University of Debreczen, Hungary. Berlin: S. Karger. 1926. With 25 illustrations. Pp. 219. M.12.

ALTHOUGH the title of this book indicates its concern with the treatment of general paralysis, we find chapters on ætiology, pathology, pathogenesis, on hyperergic reactions in the disease, taking up, perhaps, a quarter of its pages. The treatments examined are those by injections of immune serum, by infection (paraspecific therapy), and by direct (intralumbar and other) methods. In regard to the first of these, the following figures are given: of 63 patients thus treated, 6 improved, 15 became worse, 19 remained unchanged, and 23 died. Under the second category are discussed the techniques and results of tuberculin, vaccines, sodium nucleinate, phlogetan, injections of milk, and malaria. To the last of these considerable attention is given; the use of the spirillum of recurrent fever is also examined. The problems associated with the manner of action of paraspecific therapy receive consideration. Finally, the numerous modifications of salvarsan therapy are investigated. After each chapter excellent bibliographical references are furnished. The treatment of general paralysis is in a state of flux; this useful volume discusses not only modern therapeutic methods but also those now almost obsolete and of little more than historical interest. On the other hand, it is equally possible that the vogue of the malaria method will fade when a true specific therapy is attained. For the moment it seemingly holds the field, although the use of tryparsamide is also receiving support.

NERVOUS ANATOMY.

Les Noyaux Gris Centraux et la Région Mésencéphalo-sousoptique. By Ch. FOIX and J. NICOLESCO. Paris: Masson et Cie. 1926. Pp. 582. Fr.125.

WE have nothing but praise for this fine contribution to nervous anatomy, which is, indeed, worthy to take its place as a supplement to Dejerine's famous "Anatomie des Centres Nerveux." Superbly illustrated, it fills a definite lacuna in the literature, for the ever increasing study of the pathological and clinical aspects of the basal ganglia renders exact knowledge of their anatomy indispensable.

A description of the general anatomy of the basal ganglia and the regio subthalamica is followed by a minute study of serial sections, cut in various directions, and this in turn by a synthetic consideration of each organ separately and its connexions. There is an appendix on the pathological anatomy of Parkinson's disease.

The volume does the greatest credit to its authors, the printers, and publishers; it represents French neuro-anatomy at its highest level of lucidity and erudition.

THE DISPENSATORY OF THE UNITED STATES OF AMERICA.

Twenty-first edition. Edited by HORATIO C. WOOD, jun., M.D., and CHARLES H. LAWALL, Ph.M., D.Sc., Phar.D., with the assistance of H. W. YOUNGKEN, J. F. ANDERSON, and IVOR GRIFFITH. London: J. B. Lippincott Company. 1926. Pp. 1792. 65*s*.

THE general form and mode of presentation of this immense work of reference are the same as in the previous 20 editions, but the pharmaceutical progress of the last eight years has involved a large amount of revision and rewriting. The new U.S. Pharmacopœia has officially recognised 33 new drugs, and many other new remedial agents have been introduced. The International Formulary being now a legal standard in most parts of America, the drugs contained in it have been transferred to the official section of the dispensatory. Careful pruning and condensation have avoided any increase in the size of a book already, as the editors admit, somewhat unwieldy in a single volume. Translations of metric into apothecaries' measure and of Centigrade temperature into Fahrenheit have accordingly been dropped in the hope that they will no longer be found necessary by a large proportion of readers, but the double system is continued in the case of doses, for it appears that practically all prescriptions in America are written in apothecaries' measure. Copious bibliographical references are designed to unlock the door of the past to those who wish to trace the history and development of some phase of pharmacy. The text is given of the Food and Drugs Act and of the Harrison Narcotic Act, and then follow in alphabetical order the descriptions of official drugs, some account being included in each case of the commercial history and varieties, physical properties, constituents, impurities, adulterations, and

uses. This book is the standard work of reference for pharmacists in the United States and will prove a mine of information to their colleagues and all who are interested in drugs and drug preparing in other countries.

SEX IN MAN AND ANIMALS.

By JOHN R. BAKER. London: Routledge and Sons. 1926. With 22 figures. Pp. 175. 7*s.* 6*d.*

PEOPLE nowadays think and talk so much more frankly and openly about sex than they used to that it is well, as Prof. Julian Huxley says in his preface, that they should have some accurate knowledge of the fundamental facts. In this book Mr. Baker has given a plain and very clear account of the mechanism and significance of sexual reproduction, adapted, as he hopes, for biological and medical students as well as for the general public. In successive chapters he exposes the advantage of sexual propagation, sexual selection, sex chromosomes and hormones, abnormalities of sex, the sex ratio, the control of sex, and sex behaviour. The accuracy of his facts is vouched for by Prof. E. S. Goodrich and Prof. J. Huxley, and in a small space he tells an interesting tale in a way which will probably be intelligible to a serious reader without any technical training. Rather unfortunately, we think, Mr. Baker has not been able to resist the temptation to point what he takes to be the morals of it all and, especially in its later parts, the book wanders over the widest fields of speculative psychology and dogmatic sociology where his statements are naturally of a different order of validity from those which describe the results of experimental biology. In what he says, for instance, about over-population, contraception, and agricultural life in the Dominions (p. 168) he does not seem to realise that there is no evidence of a serious kind that children of small families grow up into better citizens than children of large families; that such is the case seems a natural a priori assumption, but it is no more than that. However, where Mr. Baker is weakest his readers will be strongest and will form their own opinions. These will be more likely to be correct if his cytology and physiology have been properly apprehended.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY.—To the August issue Prof. O. Berner (Oslo) contributes a highly technical paper entitled "Studies in the Peripheral Relations of the Musculus Dilatator Pupillæ." The existence of this muscle, long doubted, is now established, but its attachments have never hitherto been defined. The paper should be read in relation to the different theories which are held of the functions of the circular fibres of the ciliary muscle.—C. A. Clapp (Johns Hopkins Medical School) gives drawings of new-formed vessels in the vitreous of a syphilitic patient.——In the September issue R. C. Davenport reports on the cases of glioma retinæ treated at Moorfields during the years 1915–24. There were 27 treated during this period. In 17 of them the end-results and histories were sufficiently certain to give figures. The known cures—i.e., survivals for three years without recurrence—were 7, but in one case recurrence in the second eye took place about 14 years after excision of the first eye. Progress was then so slow that it was four years before the second eye was excised in 1918. It is remarkable that in this case the patient made a good recovery and is still alive. Another report on the after-results of corneo-scleral trephining for glaucoma by the same author is even more interesting. The paper analyses the results in the case of 405 eyes trephined for primary glaucoma. Of these 80 per cent. were apparent successes and only 4·5 per cent. complete failures. The point which remains most in doubt as to this operation is that of late infection. In all 14 cases of "late" infection were treated at Moorfields during the years 1919–24, and in eight of these it was clearly an infection via the trephine hole. The majority of the cases occurred a few months after operation—one as late as seven years after. In only two cases was the infection so severe as to call for evisceration. Mr. Davenport opines that late infection, while a serious if not very frequent misfortune, is hardly the bogy it is often made out to be by some who even call for the total abandonment of the trephine operation.—— The October issue is occupied by a long communication from W. S. Duke-Elder on the ocular circulation, its normal pressure relationships and their physiological significance. Incidentally, he has some hard words to say of any form of tonometer as an instrument of precision. Its only use, he says, is confined to the comparison of the two eyes of the same individual at the same time, or of the same eye at different times. This, however, is precisely the way in which the instrument is generally employed. For this reason he condemns P. Baillart's method of measuring the intra-ocular arterial and venous pressure and has devised a method of his own which he describes. Experiments were carried out in the Department of Physiology and Biochemistry in University College, London. It is demonstrated that the pressure in the retinal arteries is about 75 mm. Hg in the cat, that the pressure in the intra-ocular veins is in all circumstances greater than the intra-ocular pressure, but, under conditions of raised intra-ocular pressure, the pressure in the venous exits may fall below the chamber pressure. The capillary pressure is very variable and has no direct relation to that of the arteries. The relation of the vascular to the intra-ocular pressures is compatible with the theory of the formation of the aqueous by a process of dialysis from the blood, so that the hypothesis of a secretory apparatus in the ciliary body is unnecessary. The circulatory conditions lead to the expectation that the dialysation of the intra-ocular fluids would occur *from* the blood stream mainly, but not entirely, through the vessels of the ciliary body and iris, and *to* the blood stream mainly, but not entirely, through the canal of Schlemm. Incidentally, the assertion of Thomson Henderson that the circulus arteriosus major of the iris is really venous is combated. The article, to which is appended a copious bibliography, is an important contribution to the physiology of the eye.

THE RASSEGNA INTERNAZIONALE DI CLINICA E TERAPIA (Naples) for August, 1926, contains an interesting original contribution by Prof. V. Tramontano and Dr. F. Pansini on Multiple Neurofibromatosis, a syndrome described by Recklinghausen in 1883 and generally associated with his name. After a résumé of the work done by other observers the authors describe a typical case under their care with coloured illustrations of the microscopical appearances, which show that the new tissues are composed of elements with large clear round or oval nuclei, and arranged in parallel bundles which sometimes assume a spiral form. Changes in the endocrine glands were not found. These observations point to the conclusion that Recklinghausen's disease is due to embryogenetic changes in the tissues which, stimulated by various causes, most frequently toxic, proliferate and determine the morbid process.—Dr. R. Calvanico in another article describes the histological changes in transplanted ovaries in animals. Although the follicular elements completely disappeared after an interval of 40 days, the interstitial elements did not become sclerotic, but contained many cellular elements which suggested a permanence in specific capacity. In proof of this he describes a case in which a healthy ovary was transplanted from one woman into another, who at the age of 25 years suffered from primary amenorrhœa and remained sterile after five years of marriage. The operation was so far successful in that a metrorrhagia occurred at monthly intervals accompanied by turgescence of the breasts and lacteal secretion.—Prof. L. Castaldi contributes a synthetic review on the problem of determination of sex.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 13, 1926.

EPILEPSY AS A DEFENCE.

MEDICAL and legal views of criminal insanity are notoriously unreconciled. The doctors feel that the law courts err in adhering to obsolete tests of mental disease; they know that, long before actual delusions or open signs of insanity manifest themselves, there may be symptoms of a morbid condition affecting the patient's mental activities, and that the early symptoms and the final delusions, mania, melancholia or dementia are merely different stages in one disease. On the other hand, the lawyers answer, in terms which find expression in the Atkin Committee's report: "We do not profess to define disease of the mind, but only to define the degree of mental disease which shall be allowed to negative criminality; this is as much a question of law as the question at what age a child is to be deemed criminally responsible." This difference between the medical and the legal outlook is frequently illustrated, and especially in murder trials, where, since a conviction for murder entails the death penalty, every possible point must be taken for the defence.

A fresh example occurred at the Herefordshire assizes last week upon the indictment of CHARLES HOUGHTON for the murder of two ladies named WOODHOUSE by whom he was employed as butler at Burghill Court, near Hereford. The prosecution alleged that HOUGHTON, a man of 45, had been in the service of the WOODHOUSE family for 22 years and was given notice of dismissal last September because he had taken to drink; next day, after attending family prayers and serving the family breakfast, he shot them and was presently found in his bedroom with his throat cut. A suggestion of epilepsy was made during the cross-examination of Dr. VINCENT SHAW, who was a witness for the prosecution, but Dr. SHAW declared that the accused seemed to be perfectly normal. For the defence the prisoner's sister stated that between the ages of 7 and 11 HOUGHTON had fits which caused him to foam at the mouth. Dr. CYRIL FRANCIS, another witness for the defence, said he had examined HOUGHTON the previous day, when the prisoner seemed not quite normal; the symptoms he found pointed to epilepsy. Dr. FRANCIS expressed the belief that there might be a possibility that HOUGHTON had lost his mental control. During the giving of this evidence Mr. Justice RIGBY SWIFT is reported to have twice interposed the question, "Are you prepared to swear that in your opinion he was in fact so insane as not to know what he was doing?" Dr. FRANCIS was unable to put the prisoner's case so high, and Dr. JAMES BELL, medical officer at Gloucester prison, stated on the other side that in his opinion HOUGHTON had shown no signs of insanity, mental disease, or epilepsy, nor did he think that HOUGHTON had had an epileptic fit on the day of the shooting. HOUGHTON was found guilty on the first indictment of murdering one of the two ladies; he was sentenced to death, and the further indictment in respect of the second alleged murder was not proceeded with.

It may be recalled that one of the Atkin Committee's recommendations was that provision be made under departmental regulations for examination of an accused person by an expert medical adviser at the request of the prosecution, the defence, or the committing magistrate. Has this been done, or is the matter left in abeyance like the other recommendations made by the Committee?

NARCOLEPSY.

"The disease I am about to describe is characterised by the occurrence of attacks of irresistible sleep without apparent cause, and curious attacks on emotion in which the muscles relax suddenly so that the victim sinks to the ground, fully conscious, but unable to move."

THIS almost dramatic sentence forms the opening paragraph of a paper on Narcolepsy by Dr. W. J. ADIE in the October issue of *Brain*. In it the whole description of the malady is crystallised, for Dr. ADIE rightly contends that the term "narcolepsy" is best confined to the condition—with peculiar and unmistakable features—of which his article treats. His description of the characters of the disease is based upon eight cases from his own observation, supplemented by some 15 published reports, and it will undoubtedly establish the condition as a clinical entity with this label. Narcolepsy, as thus defined, is more common in the male sex; it usually begins between the ages of 11 and 35 and persists unabated throughout life. REDLICH first drew attention to signs of ductless gland disorder in some of the cases—a small pituitary fossa, slight acromegalic signs, obesity, delayed sexual development, or periods of amenorrhœa being occasionally observed. Otherwise the patients are to examination physically and mentally normal. In most cases two kinds of attacks occur: either the patient is overcome by sleep, or, usually as a result of some emotional disturbance, the muscles become flaccid and powerless. These Dr. ADIE names "sleep attacks" and "cataplexy" respectively. The former nearly always appear first and may precede the latter by a year or more. The attacks vary greatly in frequency, but usually occur daily, and each may last from a few seconds to 15 minutes or even more. There is a certain constancy in those of each individual. They may occur not merely when conditions are conducive to sleep but when they are the very reverse—in the midst of an interesting conversation, while cycling or riding, during bombardments and even on listening-post duty. Many patients know when an attack is coming on, but, though they may delay it, they cannot prevent the onset of sleep; on the other hand, any slight stimulus from without may dispel the sleepiness at once and completely. The sleep of the attack is in every way similar to natural sleep. The cataplectic attacks are brought on by emotion, usually by laughter; "when I laugh I fall down." In these seizures, as a rule, the patient merely feels limp, falls flaccid, and regains control of himself after a few seconds, but occasionally the cataplectic attack may end in sleep. Naturally enough, many such attacks are mistaken for petit mal, and some are even diagnosed as chorea. Dr. ADIE takes some pains to show that the two kinds of attack are essentially the same, the cataplectic attack corresponding to the aura of the sleep attack and being in fact merely a slighter form of it. The feeling of powerlessness is merely an exaggeration of that helplessness or inability for action which may overcome normal people or animals under strong emotion—e.g., with laughter, or during fear or horror. "But our patients," he says, "so far overstep the arbitrary limits of the normal that we are justified in saying that they suffer from disease."

The diagnosis has to be made from epilepsy, pyknolepsy, and hysteria, and from certain conditions such as pituitary or other cerebral tumour in which excessive somnolence may prevail. From epilepsy the main diagnostic difference is that cataplectic attacks are brought on immediately by a recognisable exciting cause—namely, emotion—whereas attacks of epilepsy come on without apparent cause; in ruling out hysteria reliance may be placed on the absence of undoubted hysterical manifestations and the failure of every kind of suggestion to banish the attacks.

Dr. ADIE is most interesting, however, when he discusses the theoretical considerations to which this disease gives rise, and co-relates the phenomena of narcolepsy with those observed in animals by PAVLOV during his study of sleep. The matter is closely bound up with the study of the so-called conditioned reflexes. We can distinguish between reflex activities with nervous connexions present at birth, and associated reflexes which appear during life; if indifferent stimuli frequently accompany a stimulus which evokes an inborn reflex, these stimuli by themselves soon begin to evoke the same inborn reflex by "association." PAVLOV calls the inborn reflexes "unconditioned" and the acquired reflexes "conditioned." Conditioned reflexes may be inhibited or delayed (internal inhibition). From the beginning of his researches on conditioned reflexes PAVLOV was greatly hindered by somnolence and sleep which overcame his animals during the experiments. For example, it would happen that after a good conditioned reflex had been established, the animal became somnolent or fell asleep during the time that the conditional stimulus was active. In one instance food followed the stimulus in ten seconds and the reflex secretory and motor responses of the animal during those ten seconds were very active. But when food was withheld for 60 seconds the dog became sleepy during the waiting period, the conditioned response disappeared (was inhibited), and the dog that had never slept in the experimental stall before fell asleep every time the stimulus was repeated. From variations of many such experiments PAVLOV reached the conclusion that sleep and internal inhibition of reflexes were essentially the same process—inhibition being a partial and strictly localised sleep confined to a small area of the cortex—while sleep was inhibition which had spread throughout the cerebral hemispheres and to subcortical centres. If we wish to limit inhibition and prevent it passing into sleep we must produce new points of excitation in the cortex by using stimuli of a different kind.

In the attacks of narcolepsy every gradation is seen between slight and local cataplexy and profound and prolonged sleep. If, as appears likely, the former is a result of inhibition of cortical processes, then the sleep in the other cases must also be due to inhibition. PAVLOV'S conclusions thus receive support from the phenomena of narcolepsy. On the other hand, some features of narcolepsy become intelligible in the light of his experimental findings. Apparently, attacks in narcolepsy are favoured by a lack of extraneous stimuli and, secondly, by monotonous stimuli. In PAVLOV'S dogs repeated stimuli, even though painful, produced sleep with certainty if no dissimilar extraneous stimuli reached the animals. The receptive point on the cortex apparently became fatigued; it slept, and the inhibition spread to produce general sleep. The same seems to occur in the narcoleptic patient. Again, it was difficult to understand at first why patients were unable to resist sleep and yet could almost always be wakened with extreme ease. PAVLOV'S results supply the explanation: the inhibition was dispelled at once and completely by a fresh excitation of another kind. Dr. ADIE submits that all the attacks in narcolepsy are due to inhibition, whether they take the form of "tone loss attacks on emotion" or of frank sleep. The explanation is ingenious and satisfying and in accordance with experimental work. The indications are that such a physiological disturbance arises from a disorder of the pituitary or of structures in the 'tween brain which are associated with it.

BIRTH CONTROL INSTRUCTION BY PUBLIC AUTHORITIES.

IN the last annual report of the county borough of Croydon Dr. H. P. NEWSHOLME comments upon the desirability of giving official permission to public authorities to instruct poor people in artificial birth control. Two arguments stressed by Dr. NEWSHOLME deserve consideration. (1) He considers that children of large poor families, born at close intervals, gain, from contact with other children of their own age, more than they lose from the physical privations to which they are exposed by the extra financial responsibilities of their parents. (2) Any method of birth control other than that of self-restraint cannot be generally encouraged on account of the "irreparable harm" which the use of contraceptives might cause by "changing the attitude of husband and wife to one another." "I feel," says Dr. NEWSHOLME, "that this, though a difficult matter to define, is a fundamentally important question, and that the basic danger to national life arising from the adoption of mechanical means of birth control on anything like a national scale depends not so much on the risk of a stationary population as on that of a materialistic bias in the national attitude towards sex and marriage." Dr. NEWSHOLME concludes his review with a cautious advocacy of a medically supervised extension of knowledge of artificial birth control to the poor. But he makes two conditions for this proposed official extension. The first is that the selection of medical officers be very carefully made. The responsibilities to be undertaken are so onerous, and their incompetent discharge so fraught with disaster for the community, that only medical men of established discernment and judgment are held to be fit for it. The second condition is that advice be given only when the medical officer has personal knowledge of the home circumstances of both parents, and when he has discussed with them the possibility of applying methods of self-restraint. Dr. NEWSHOLME would have this advice given at the antenatal centres rather than at the child welfare centres.

With Dr. NEWSHOLME'S practical conclusion few unprejudiced medical men to-day would quarrel. A motion embodying the same general conclusions was carried by a majority of votes early this year in so conservative a body as the House of Lords. But the considerations advanced above, which make his conclusion so tentative and conditional, hardly possess universal applicability. His argument that the children of small families suffer from deprivation of healthy contact with children of their own age, while probably being true of Croydon—a relatively well-to-do neighbourhood—does not hold of poorer quarters of London. In these, the playground for the children, in almost all weathers, is the street. Here the child, whether he be an only child or a

member of a large family, is thrown into a more than sufficient contact with children of all ages. The houses and flats of the people for whom the new legislation is suggested are so small, and for the most part so crowded together, that even if each family were restricted to one or two children, these would make, in the streets and the enclosures of the tenement houses, as much healthy contact with children of approximately their own age as the sturdiest educationist could require. But Dr. NEWSHOLME'S argument undoubtedly has weight when applied to the middle classes. The only child of the city worker, living in a semi-detached villa in the suburbs, or even of the wealthier parent residing in a more fashionable part of London, in more cases than not does suffer from the deprivation described by Dr. NEWSHOLME. But it is not primarily for the mothers of these that the medical officer of the antenatal centre would provide the suggested information. The second argument, that the use of contraceptives leads to a loss of mutual esteem between parents, is one which emanates more frequently from the mouths and pens of clergymen than from doctors. Anyone acquainted with the street corners of slums on Saturday nights or on Bank Holidays can picture to himself the scenes that are destined to be enacted between husband and wife when the public-houses are emptied and the homes are filled. If we are concerned with the mutual respect between the slum-dwelling husband and his wife let us discuss it in this connexion after the drink question has first been solved.

There is another aspect of this problem which has been omitted from consideration by Dr. NEWSHOLME, though it has considerable medical importance. The sale of contraceptives which are bought and fitted without any kind of medical advice or supervision has been conducted among the middle classes for a considerable time past. It is beyond discussion that the promiscuous buying and unsupervised adjusting of pessaries has been responsible for not a little genital disease, and probably also of sterility. Insufficient distinction has been made by medical men between the harm caused by contraceptives thus promiscuously acquired, and that following from their use after the cervix has been inspected and a pessary of suitable size, quality, and shape has been fitted by a competent doctor. It is to be presumed that these measures would become the routine of the medical officers as they now are at the clinics where information on artificial birth control can be obtained. The indifference evinced until recently in this matter by the medical profession has led to an extensive sale of contraceptives which are inefficient, injurious, and in many cases outrageously expensive. Hitherto the sale has been made chiefly to the middle classes. To-day there are signs that it is being extended to the working classes, where already the practice of abortion in its crudest forms is prevalent enough. There are at present several firms—and not all of them British—bent on selling contraceptives to the English public. Seeing that there is nothing whatever to prevent a woman, whatever her status, from buying these contraceptives, and nothing to hinder her from misapplying and misusing them, it would seem desirable on purely medical grounds that facilities be made available for consultation and supervision, though whether these should be linked up with welfare clinics is not necessary.

Upon the question of birth control many highly controversial statements have been made. In the present circumstances, however, it seems possible to frame two that will command fairly general assent. In the first place, it may be said that birth control, whether by means of contraceptives or by self-restraint, is being practised relatively too much by the upper, middle, and artisan classes, while it is being practised relatively too little by the unskilled labouring classes. Secondly, it may be stated that if birth control is to be practised at all—and many inducements to its adoption, commercial and otherwise, are being brought to bear on all classes—it should be practised under proper medical supervision.

Annotations.

"Ne quid nimis."

THE BEIT MEMORIAL FELLOWS.

FIRST among the problems of post-graduate medical education is the kind of training most suitable for those intended to fill the posts of teachers in medical schools. The experience needed by men who intend to devote themselves exclusively to research on the one hand or to the healing of the sick in their own homes on the other, is easier to arrange. Those acquiring new knowledge, and those anxious to apply that already gained are at opposite ends of the medical pole and there is no special advantage in burdening either class with too intimate a knowledge of the perplexities of the other. Indeed, some hold that the business of research should not be hampered by any sense of the need to achieve immediate practical results, while the dogmatic optimism of the practitioner is often a better tonic when untempered by perception of the futility of arguing from uncontrolled results. Teachers, however, must have an appreciation, if not actual experience, of all branches of medicine, if they are going to help each student to select the activities most suited to his talents. The formation of clinical units in our medical schools was an expression of the desire to secure as teachers of medicine and surgery men who have clinical experience and at the same time have not only been trained in research, but are still active in the pursuit of what is to them the most fascinating of recreations. It is more than a coincidence that the endowment of research fellowships by the Rockefeller and Beit trustees has occurred at the same period as the purely clinical training for hospital teachers has been found wanting. It is essential, if we wish to get full value from such generous endowments, to make known the careers open to those selected to hold these research fellowships. Their after-history is at least as important to medical progress in its widest sense as that of the sufferers from the diseases they are subsidised to investigate, and, happily, not so difficult to ascertain. A valuable pamphlet, just issued by the trustees of the Beit Memorial Fellowships for Medical Research (35, Clarges-street, London, W. 1), gives information not only as to the conditions of value and tenure of the fellowships, the places where research is authorised, and the times and methods of application, for the information of candidates, but also a list of the 108 fellows elected since 1910, with the nature of their authorised research and notes on their after careers. Of the total number 6 are dead and 31 are still holding fellowships, or have completed them only in 1926, so that the fate of some 70 fellows remains to be analysed. Of these 12 (F. Ransom, S. Russ, E. Mellanby, T. R. Elliott, J. A. Gunn, C. H. O'Donoghue, J. McIntosh, A. B. Macallum, E. C. Grey, V. H. Moorhouse, G. E. Nicholls, E. B. Verney) have been elected to fill university chairs in such diverse subjects as pharmacology, physics, medicine, zoology, pathology, biochemistry, chemistry, and physiology; 4 (H. Priestley, D. T. Harris, W. G. Penfield, and H. Goldblatt) are associate or assistant professors respectively of physiology (2), surgery, and pathology, and 13 hold lectureships. Fourteen are attached to the honorary staff of hospitals, and of the remainder the majority hold permanent posts in research institutions, mostly with a substantial list of publications to their credit. The success achieved by so many of the Beit fellows should be an encouragement to those hesitating whether or not to apply for the Fellowship in Tropical Diseases now vacant. Formerly the man who chose after qualification to take a research fellowship instead of a routine clinical or teaching appointment used to take a certain risk, since promotion mostly followed the direct line of demonstrator, lecturer, reader and professor on the academic side, whereas the path to clinical promotion was that of

house physician or surgeon and registrar, followed by a long period of more or less continual presence in the hospital as clinical assistant until a vacancy should arise on the honorary staff. It is this intermediate period of "hanging round hospital"—prohibitive to those without private means—that can now usefully be filled by tenure of a research fellowship. The varied record of achievement of the Beit fellows is a sign that whatever the aspirations of a newly-qualified man or woman, the tenure of such a fellowship is likely to advance them.

LIVE AND DEAD VACCINES.

THE stricter sect of the pharmacologists are apt to say that there are about half a dozen drugs which really have some action which is worth considering, and that a good deal of the rest of the pharmacopœia might well go the way of sarsaparilla. What they mean is that only a few drugs have a definite curative action which is so obvious that it cannot be missed by the superficial observation of a few cases. It is one of the great problems of therapeutics to decide for certain whether the effects of "tonics" and "alteratives" and such like really justify the vast quantities of them which are prescribed and drunk. In their favour is the mass experience of practising medical men; against them is the fact that their use is empirical, and their actions, if any, inexplicable. The pharmacological use of bacterial bodies and of substances derived from them came in under the influence of one of the greatest of modern biological discoveries—the immunological species-specificity of proteids—and it was natural that in the earlier trials this specificity should have controlled the choice of the remedial agent; to try to protect against typhoid fever by injecting dead anthrax bacilli would have been an attempt of almost inconceivable originality. But as Prof. J. McIntosh points out in his presidential address to the Pathological Section of the Royal Society of Medicine, which we printed on Oct. 30th, there has slowly grown up a body of varied observations which show that the injection of any foreign proteid may rouse the body to a response which may be favourable against any infection, and, indeed, against some morbid conditions which are not clearly known to have an infective origin. It is not known why ulcers of the leg should be improved and cured by the injection of the bacteria which find their way into distilled water or by an intravenous dose of boiled milk or by an extra large quantity of any bacterial vaccine. The practice is at present frankly empirical. Prof. McIntosh suggests that these non-specific injections throw the body into a state analogous to the fever due to infection and help the general resistance as a poultice helps local resistance. It may well be so, though much more demonstrative evidence is needed before this explanation can be regarded as wholly satisfactory. Whatever its rationale, however, the method is clearly of some therapeutic value, in some cases, notably general paralysis, of a high order. It is, indeed, an "alterative," as anyone who has experienced protein shock therapy will readily agree. If it were better understood it would be easier to use it more efficiently, and it is of good augury that it should be favourably considered from a point of view where specificity generally reigns supreme.

Prof. McIntosh puts forward other conclusions which are also open to some differences of opinion. He regards the use of living vaccines as a retrograde step, which should be rigorously opposed, having in mind the recent discovery of vaccinial encephalitis, and looking with suspicion on Calmette's advocacy of a live vaccine of attenuated tubercle bacilli. It is possible that a dead vaccine virus may be as efficacious against small-pox as killed rabies virus seems to be, and it is most desirable that every effort should be made to find out whether this is so. But it can hardly be denied that all attempts to protect against tuberculosis with dead tubercle bacilli have failed, and in the face of the importance of the problem it seems a little academic to condemn a method which holds out at least some slight chance of success on theoretical considerations of our ignorance of what might happen. The success, too, with dead vaccines in plague and pneumonia is scarcely as great as one would like; the pneumococcus, indeed, has resisted bacteriology and hygiene with most disappointing success. A return to live vaccines would certainly be a return to an earlier practice; it does not necessarily follow that it would be ineffective or dangerous.

THE INCIDENCE OF CANCER IN AMERICA.

IN a recent issue of the *Bulletin* of the Office International d'Hygiène Publique Dr. W. W. King, of the U.S. Public Health Service, discusses the incidence of malignant disease in the United States of America. It is only since 1900 that complete statistics have been available, but even within the comparatively short period of a quarter of a century cancer has passed from the ninth to the fourth place among the principal causes of death. In 1900 deaths from malignant new growths formed 3·6 per cent. of the total mortality, whereas in 1924 the percentage had nearly doubled, reaching 7·75. An exhaustive inquiry was set on foot some years ago by the U.S. Public Health Department in order to ascertain how far the apparently increased incidence of cancer was real. An analysis of the tables brings out a number of interesting points. Thus, in investigating the cancer mortality-rate in various age-groups, it was found that the increased percentage-rate occurred from the age of 20 to 29 years and upwards, but was most marked from 70 years of age. It is pointed out, however, that, as in other countries, there has been a marked decline in the number of certificates in which the cause of death is "unknown" or ascribed to senility, the greater accuracy of modern diagnosis also being reflected in the drop in the number of deaths ascribed to benign tumours. These and other factors probably account for about 30 per cent. of the increased cancer mortality-rate, the remaining 70 per cent. representing the true increase. With regard to the site of malignant tumours, there is a markedly greater increase in the incidence of cancer affecting certain of the more accessible organs, such as the tongue, breast, or uterus, than in that of less accessible sites, such as stomach or liver, the increase ranging from 65 per cent. in cases of cancer of the female genital organs and 103 per cent. in cancer of the oral cavity, to 51 per cent. in cancer of stomach or liver. The greatest increase of all, however, was found in cancer of the peritoneum, intestine, and rectum, which amounted to 148 per cent. in the 20 years under review. As far as cancer of the breast is concerned, it is the age-group 30–39 years which shows the greatest increase in the death-rate. On the other hand, in cancer of the stomach and liver, which accounts for 36 per cent. of all cancer deaths in the United States, the greatest increase appeared in the age-groups above 40 years. Analysis of the statistics furnished by 34 of the United States and by a large number of towns with more than 100,000 inhabitants shows that, generally speaking, the Northern States have a higher percentage of deaths from cancer than the Southern States. Negro and white races appear to be equally susceptible.

ANGINA PECTORIS.

Angina pectoris was known to Hippocrates and Erasistratus, but Heberden was the first of later physicians to describe it, using in 1768 the name it still bears. Parry first suggested calcification of the coronary artery as a cause, but did not follow up his hypothesis with anatomical proof. Jurine, in 1815, suggested as the cause a neuralgia of the pneumogastric and phrenic nerves, and Latham, in 1846, put forward a theory that it was due to cramp of the heart-muscle. Bernard was the first to produce an attack artificially by nicotine, and later work

has shown that this poison acts on the coronary artery as well as on the splanchnic and peripheral vessels. On the whole, the coronary theory is the one supported by the greatest weight of authority, though the discussion reported on p. 1010 shows that it is not universally accepted. Dr. Hans Kohn has expounded it with a formidable mass of evidence in the monograph[1] which he has just published as part of the vast Brugsch symposium. His conclusions are that angina pectoris is invariably due to stenosis of the coronary artery, and that this is nearly always a result of atheroma, syphilitic infection or endarteritis obliterans. Thrombosis occurs in some cases, but embolism and anatomical anomalies complicate only a very few. Nevertheless, he considers, in a certain percentage of patients the cause is functional; nervous instability and the action of toxins produce angina even if the coronary artery is sound. Very rarely the excitant is a purely anatomical lesion of the extracardiac nerves. He deduces from these data that angina is a disease entity and not a group of symptoms, that there is only one angina, and that "there is no pseudo-angina, but only pseudo-diagnosis." The pain, and its by-product the oppression, arise in the coronary artery and in the ischæmic heart-muscle. The question of whether the ischæmia itself is due to acid deficiency, to excess of the waste products of metabolism, or to physical alterations, and whether the pain thus produced is actually due to cramp of the heart-muscle, Dr. Kohn finds himself bound to leave to other investigators. He explains the sense of annihilation as possibly a product of the disturbance in the autonomic nervous system, a branch of which innervates the coronary artery, but thinks it more likely to be an expression of a momentary stoppage of the heart resulting from ischæmia of its muscle. Everyone is familiar with the distress that accompanies the slightest spasm of the heart, and considering the importance of this organ, it is not surprising that any distress here should reflect itself emotionally as a feeling of imminent death. Death in an attack is a result of the local anæmia. Attempts to alleviate the attack itself must always be directed against the spasm, and in certain cases against secondary failure, and this fact supports the coronary hypothesis. Dr. Kohn's treatise should not be neglected, for although he holds decided opinions he has selected his authorities with scientific impartiality, and, needless to say, with Teutonic thoroughness.

WHAT IS ALLERGY?

ALLERGY, according to the definition of Pirquet, the originator of the term, is the changed power of reaction which the body acquires as the result of infection by a parasite or injection of a foreign substance. Obviously this definition is a very wide one. On the one hand, it will include not only infection by parasites which multiply after entrance into the body but also injection or ingestion of chemical substances which do not increase in amount, but rather break down in the tissues into simpler substances; on the other hand, logically at any rate, the definition will include increased power of resistance as well as diminished resistance or hypersusceptibility, though it is in the latter sense that the term is practically always used. Thus the term allergy tends to become broader as time goes on, and is nowadays so much confused with the term anaphylaxis that it is difficult to know where to draw the line. It would seem to be safest to confine the term anaphylaxis to the definitely specific reaction in relation to protein injection for which the word was originally coined by Richet. How much depends on definition may be gathered from a study of a recent book[2] by Prof. Hugo Kämmerer, of Munich, wherein the author discusses allergy in all its modern significance and in its relation to anaphylaxis. These developments carry us far afield and have a bearing on allergic disposition (constitution), diathesis, predisposition, idiosyncrasy, heredity, and numerous other terms which have hitherto belonged to the vague hinterland of clinical medicine without possessing a clearly defined significance. Allergy will not explain all the questions wrapped up in these clinical phrases, but it is all to the good that an attempt should be made to define their boundaries. This discussion naturally leads the writer to a consideration of various diseases which, he considers, have an allergic basis. The diseases included are urticaria, bronchial asthma, hay fever, angio-neurotic œdema, certain forms of enteritis, migraine, epilepsy, the toxicities of pregnancy, Henoch's purpura, metabolic diseases associated with joint conditions, infectious diseases, and some cutaneous diseases. This list is truly formidable, and the casual reader may think that Prof. Kämmerer pushes his theories too far, but the more carefully the line of argument is followed the more obvious it becomes that there is a case for our consideration. The modern work on histamin, on the vegetative nervous system, and on the endocrines are all dealt with fully, and there is a particularly good critical review of Widal's hæmoclastic crises. Although we may not be able to go all the way with the author in his conclusions, we cannot fail to appreciate the thoroughness with which the material has been investigated and put together. A questionnaire at the end of the book includes no less than 87 questions to be answered in the investigation of the causation of asthma on an allergic basis. Those who wish to follow the subject further will find references and a good subject index in Prof. Kämmerer's book.

[1] Angina Pectoris. Ergebnisse der Gesamten Medezin. Urban and Schwarzenberg, Berlin and Vienna.

[2] Allergische Diathese und Allergische Erkrankungen. Munich: S. F. Bergmann. 1926. Pp. 210. M.13.50.

SYPHILIS IN GENERAL PRACTICE.

PUBLIC discussion of the problems of venereal disease is a recent innovation; it is only a decade since a leading daily paper acknowledged their existence by admitting the word "syphilis" into its columns. Although, however, the treatment of this disease is being spoken of more and more freely, both inside and outside the medical profession, a discussion at the Royal Medico-Chirurgical Society of Glasgow last week showed that many specialists find that the management of venereal cases by general practitioners leaves much to be desired. As Dr. W. H. Brown remarked in his opening paper, "the key to preventing the ravages that follow syphilitic infection, and the social and family calamities that arise therefrom, is early diagnosis and early treatment. . . . Every genital sore should be looked upon as possibly syphilitic until it has been proved the reverse. No one, however expert, is justified in assuring a patient from one or even several examinations that he has not contracted syphilis." All the speakers agreed on the rarity of the so-called typical Hunterian chancre. Dr. Madeline Archibald said that, out of 400 patients from her routine practice whose blood had been tested, no less than 100 were found to have a positive Wassermann, but only 7 of these could recollect having had a typical primary chancre. Although these figures are perhaps unusual, it is of the highest importance that the first lesion should always be recognised, even when it does not conform to type, and to this end, said Dr. Brown, every patient with a suspicious sore should be kept under observation for three or four months, even if repeated search has failed to reveal the pallid spirochæte. The importance of Wassermann tests in all cases where there are doubtful signs is sufficiently evident. Dr. Archibald pleaded for the early administration of neo-kharsivan, even amidst the routine of a busy practice, provided that the contra-indications are known and observed. In recent syphilis, as Dr. J. Ferguson Smith remarked, the physician's motto should be, "strike early and strike hard." Dr. Brown regards intravenous injection of one of the salvarsan preparations as the sheet-anchor in most early cases. The arsenic should usually be supplemented by mercury or bismuth. Practically every patient, in his opinion, should

receive 20 to 25 injections, despite the demand that such persistent treatment makes upon both patient and doctor. Although this intensive medication admittedly subjects the patient to a risk, he believes that the late results of uncured syphilis are so terrible that this risk must be taken. The urine should be carefully watched, but Dr. Smith considered that albuminuria in untreated secondary syphilis was not an absolute contra-indication to the use of neo-kharsivan. In tertiary syphilis, where the patients are usually older, less infectious, and not such good risks, a milder course of treatment might be sufficient. Nor should the practitioner forget the frequency with which unrecognised syphilis might modify such unrelated conditions as varicose ulcers, ununited fractures or cuts which would not heal. Dr. Archibald enunciated a modification of Colles's law as follows: "The mother of a syphilitic child suffers from syphilis of a latent variety, showing no clinical manifestations of the disease throughout her child-bearing life, with the exception perhaps of a positive Wassermann, but in the absence of treatment tertiary lesions may declare themselves during the post-climacteric period." She pointed out that the primary sore in the female is very difficult to detect, and that the first indication of syphilis in a woman is often the birth of a tainted child or late symptoms after the menopause. She acclaimed the treatment of conceptional syphilis as the most hopeful contribution ever made to public health by the syphilologist. Dr. W. H. Scott said that infants tolerate large doses of arsenical preparations, which may conveniently be given into the scalp veins. Seeing that the liver is practically always affected in congenital syphilis, it was curious that a drug which was markedly toxic to the liver of adults had never been known to produce jaundice in a baby. On the other hand, Dr. O. H. Mavor pointed out that late effects on the reticulo-endothelial and endocrine systems must not be forgotten, and that a certain proportion of supposedly infected children are not really suffering from syphilis, but only give the reaction of the maternal blood. Dr. T. K. MacLachlan said that the older remedies are better for neurosyphilis than the modern ones, the best results being obtained with a mercurial inunction followed by potassium iodide for meningovascular syphilis. Dr. Mavor, however, believed that specific intramuscular medication was undoubtedly helpful in causing the disappearance of bronchitis and cardiac pain, correcting cardiac irregularity, producing a consistent fall in the blood pressure, reducing the size of aneurysms, and increasing the sense of well-being. Dr. Douglas Adams suggested that pyrexial treatment would be more logically employed in the primary stage instead of being deferred until the patient was dying of general paralysis. He pointed out, in common with many other speakers, the urgent need for further investigation into the distribution of the spirochæte, its relation to tissue change, its localisation after the secondary stage, and its cultural and experimental properties. There was general agreement on the need for coöperation between pathologist, specialist, and general practitioner.

AMICABLE SUPERSESSION.

A PRACTITIONER asks for a ruling on the correct ethical attitude under the following circumstances. During a holiday a fellow practitioner and friend (B) saw his (A's) private patients for him. One house which B attended for A wishes B to continue in attendance as his fees are lower than A's. Another patient of A's wishes to go on with B whose evening surgery suits him better than that of A who has no evening hour. Should B acting as a locum-tenens under any conditions consent to continue attending A's patients? If he does, should he pay A any recompense such as half fees for a year? This is what A did himself 15 years ago in respect of the only case he ever took over in his capacity as locum. In that case the patient refused to go back to the principal, whose diagnosis and treatment he regarded as wrong. There is no suggestion of dissatisfaction in the present case. If B refuses attendance the patient would contentedly remain with A. The situation thus described is not uncommon and should not present any great difficulty, especially as it is for reasons of practical convenience, and not on any professional grounds that the patients are retaining permanently the services of the locum. Apart from the very special case where there is suggestion of sharp practice, the rule cannot be laid down that under *no* circumstances can the locum remain in attendance; the situation should be avoided as far as possible, but an inflexible rule would either be ignored or would result in the loss of the patient by both practitioners. Where the situation cannot be avoided we feel—and this feeling has been recognised in practice—that a certain proportion of the fees received from the transferees are due for a period to the original practitioner. No precise arrangement has been sanctioned, as far as we know, by any ethical body, but we have heard of one association of doctors which insures itself against unpleasantnesses under this head. Of the five or six members forming the group, one undertakes the whole secretarial work of the practices, his dispenser keeping the books and accounts. When a member goes on holiday one of his colleagues, the next on the rota, does the extra work, receiving two-thirds of the receipts, the holiday-maker one-third. This is done on a simple card system; the extra worker takes out cards for each patient of the absentee, records his doings thereon, and sends them in to the secretary to be priced. They are checked, altered if necessary, and paid in by the returned holiday-maker, who collects his third in the usual way. If a member falls ill his work is done by a member of the group who in this case takes one-third, the invalid two-thirds. Should a patient forsake his doctor for another member of the group that member pays two years' purchase for him, the amount being calculated on the amount brought in on an average of three previous years. The successful running of such a scheme implies mutual trust, and it is evidently desirable for the group to include all who have considerable practices in the locality.

IODINE AND GOITRE.

IN a recent report to his education authority Dr. W. M. Ash describes an experiment, arranged by his predecessor, to test the effect of administering iodine widely in a goitrous county. In a selected area of Derbyshire the public water-supply was iodised and iodised sweets were supplied weekly to the children of certain schools, beginning in January, 1925. In the first school, where both water and sweets were taken, the percentage of goitrous girls was 24·5 on Feb. 26th, and had gone up to 66·9 on Dec. 10th. In the second (an infants') school, no iodised sweets were taken, only the iodised water; on Feb. 27th the goitrous percentage was for girls 29·6, for boys 18·6; on Dec. 11th, 42·3 for girls and 26·0 for boys. In the third school, where the girls, aged 7–14, received sweets during the first half of the year and iodised water during the second half, the goitrous percentage in February, 1925, was 46·8, and in January, 1926, was 51·5. An experienced practitioner, Dr. Philip Turton, made all the examinations of the children. The experiment was on a small scale and is to be continued during 1926, but Dr. Ash has advised the discontinuance of the iodisation of the water-supply. In a similar experiment at Rochester, U.S.A., which Dr. Ash quotes, the water-supply was iodised twice a year for about two or three weeks, and the yearly dose of sodium iodide was estimated at about 7·5 mg., as compared with 14·9 mg. in the Derbyshire experiment. At Rochester it was claimed that the goitrous children were reduced in number from 3844 in 1923 to 1766 in 1924, but the figure for 1925 shows an increase to 2010. In a closely reasoned statement Dr. Ash discusses the iodine deficiency theory of goitre, remarking that goitre is or has been found near the sea, where there is presumably plenty

of iodine in the air—e.g., the Maritime Alps, the shores of the Mediterranean, the plains of the river Po, the Isle of Arran, the delta of the Ganges, the Isle of Wight, Cumberland, Somerset, and the seaboard of the South Island of New Zealand. He rejects the assumption that every enlarged thyroid is a diseased condition, and agrees with R. McCarrison that thyroid enlargement in children is frequently physiological and disappears spontaneously. Stress and strain, he thinks, may have something to do with the enlargements, while a nutritional factor may also be at work. Dr. Ash founds his opinions partly on personal observation and partly on the replies to a questionnaire circulated by him to doctors practising in Derbyshire. The conclusions reached by him from the study of these replies are as follows: (1) In practically all districts there has been a diminution in prevalence. (2) The proportion of females to males affected varies from 3 to 1 to 10 to 1. (3) Where the water-supply has not been improved the prevalence of goitre has remained stationary. (4) There seems to be a connexion between the presence of goitre and hard waters containing sedimentary pollution. Goitre is more prevalent in the limestone districts of the county than on the millstone grit. (5) The type of goitre in the past was the huge cystic and adenomatous goitre. The present type is smaller and softer. Dr. Ash quotes Sir James Berry as an authority who regards the iodine deficiency theory as unproven, and holds that iodine treatment for goitre should be carried out with discrimination and not by wholesale medication. Sir Alexander Houston, who has discussed the question of adding iodine to water-supplies in his last three reports to the Metropolitan Water Board, also advocates caution. In America Dr. C. L. Hartsock, of Cleveland, has been led to doubt the advisability of the general use of iodised salt by observing a large number of cases of hyperthyroidism among middle-aged men and women who have been taking iodine.[1] Apparently iodine is sold largely for its anti-goitrous action in pharmacies and grocery stores of the Middle West. On the other hand, in the August number of the *American Journal of American Sciences* Dr. K. A. Martin claims to have obtained great benefit from the administration of iodine in cases of simple goitre associated with symptoms which he ascribes to iodine deficiency, and the success achieved by the iodisation of the salt-supply in certain Swiss cantons seems to be generally admitted. The proportion of children aged 12-15 with thyroid enlargement in the Cincinnati schools is high—38 per cent. in boys and 59 in girls—and a recent U.S. Public Health Report[2] gives data for the belief that these children are definitely inferior in certain physical measurements. It might seem, on the face of it, a curious proceeding to give the whole of a community iodine because a certain number of its members suffer from goitre or to give a whole family iodised salt in order that one member may benefit, but it is reasonable to normalise the intake of iodine in a community where there is reasonable suspicion that many members are suffering from its deficiency.

SERUM TREATMENT OF GONORRHŒA.

IT is generally recognised that when some complication arises in the course of an ordinary attack of gonorrhœa the acute discharge almost immediately undergoes a change. There is a reduction or total disappearance of the discharge and in many cases this reduction is permanent; when the complication resolves the gonorrhœal infection is found to be at an end. In such cases it might be well to regard the complication as a metastasis. Even when the urethral discharge reappears in these cases the bacterial picture is altered; in films the gonococci are rare and mostly extracellular, and many other organisms are present in the film, as is common in old chronic infections. The cause of this change is not understood, but Dr. E. Sterian, of Bucharest, in a recent address to the Vienna Congress of the German Urological Society, has interpreted it as an immunising process which he explains as follows. The immunisation is due not to the gonococcus alone, but to a mixture of organisms. Likewise, each attack of gonorrhœa is due to an invasion, not by the gonococcus, but by a mixture of organisms; the aerobic gonococcus is allied—apparently necessarily allied—with facultative aerobes, with facultative anaerobes, and with strict anaerobes. According to Dr. Sterian, the disease resolves itself into three phases. First the gonococcus invades the polymorphonuclear cells, kills them, and frees the protoplasm by disruption of the cell. Secondly, the facultative aerobes—e.g., staphylococci and streptococci—seize this protoplasm and by their ferments split it into peptones and polypeptides. Thirdly, the facultative anaerobes, such as *B. coli*, seize the peptones and polypeptides and split these still further into such products as indol, which are responsible for the fœtid smell of the discharge. If this is accepted it will be seen that the grouping of microbes is not fortuitous, but determined by the chemical changes of protein necessary for the life of members of the alliance. Acting on this assumption, Sterian had produced a polymicrobic serum; this he obtained by injecting the discharge into the tunica vaginalis of a horse and thence later to the peritoneal cavity. Serum taken from horses thus treated has been injected into patients suffering from severe gonorrhœa, and Dr. Sterian states that he has had considerable success, especially in removing severe complicated infections. Several controversial principles are, however, involved in his claims. It is by no means universally agreed that gonorrhœa is an infection by a mixture of organisms, at any rate at the outset. Dr. Sterian also makes a large assumption when he regards improvement following on the occurrence of a metastasis as due to specific immunity. Many factors may be involved; fever, for instance, may play a part. The results of treatment with serum, which have not, so far, been uniformly favourable, are also possibly due to other factors. In this department of medicine protein shock therapy has occasionally had successful results, especially in gonorrhœal arthritis. The gonococcus produces an endotoxin, and so far as is known, no exotoxin; medical experience of such organisms suggests that they are unlikely to yield readily to serum therapy. The production of a serum by the use of a polymicrobic antigen is novel in its conception and must involve new methods to secure standardisation and estimation of potency; these are not disclosed by Dr. Sterian.

THE WORK OF THE MILBANK TRUST.

AMERICAN public health administration is distinguished by the intensive manner in which in one area or another special reforms have been pushed forward with a fervour which is scarcely known on this side of the Atlantic. New York City, under the leadership of the late Dr. Hermann Biggs, was a pioneer in utilising the bacteriological laboratory as an aid in administration. In many American cities and counties at the present time energetic campaigns are progressing to secure a population immune against diphtheria. In some rural areas, especially in the south, concentrated attention has been devoted to immunisation of the population against enteric infection; though evidently as sanitation and sanitary administration become developed, such immunisation will be rendered unnecessary. But the work of the Milbank Memorial Fund[1] stands out by itself among American demonstrations, in its wideness of scope and broad sweep of policy. This Fund was founded a few years ago with a large capital, which is being administered by a board of directors and advisory council numbering among its members some

[1] Jour. Amer. Med. Assoc., May 1st, 1926.
[2] Vol. xli., No. 36, Washington, 1926.

[1] The annual report for the year 1925 may be obtained from the offices of the Fund, 49, Wall-street, New York.

very distinguished names in science and medicine, and a large part of its income is now being devoted to three special demonstrations, one in a section of New York City, one in the City of Syracuse, and one in the county of Cattarangus in New York State. The two last named have been sufficiently long at work to show the importance of the experiment and the prospect of successful results. What the Milbank Trust does in undertaking a demonstration is to approach the local public health authority of the district concerned with an offer of financial help to provide additional workers, to pay present officials on a full-time basis at an adequate rate, to pay for active public health propaganda, and in various other ways to make local health administration as complete and as satisfactory as is possible in view of local conditions. In each area the financial assistance of the Fund is regarded as supplementary to, and as not in the slightest degree supplanting the efforts of, the local governing body or of existent local voluntary agencies. The responsibility and the authority of the local authority remain supreme; and the method adopted by the trustees of the Fund is one which is designed to secure continued local support and to enable the local authority to continue the same high standard of work at the end of the series of years during which it is intended to continue the coöperative experiment. Thus it is anticipated that by means of the demonstration several objects will be attained:—

1. A fairly rapid rise in the local standard of public health administration.
2. By local experimentation there will be a "testing out" of methods of administration which will secure the maximum effect for a given expenditure of time, effort, and money.
3. The benefits of efficient and complete sanitary work will be demonstrated to the local authorities concerned, and other cities and counties will be stimulated to more rapid progress than is at present being realised.

Each demonstration operates in a setting of local official agencies; it does not supersede, but serves to strengthen these. But while this programme is sound in principle, it is evident that measurement of progress made—whether by vital statistics or by details of administrative work accomplished—must be difficult. In the two areas in which most work has been done there is evidence of improving sickness and death-rates; and a detailed examination of activities in the special departments of work shows improved machinery, greatly extended work, increasing collaboration with private medical practitioners, and a degree of public interest in the details of the work which is encouraging. In this country it is doubtful whether these methods would achieve similar results, but the further course of the experiments will be watched with interest.

POTTERS' ROT.

THE pottery industry has long possessed an unenviable reputation for subjecting its employees to two definite occupational risks—lead poisoning and phthisis. The former, although it has by no means disappeared, has lost many of its terrors since its method of causation, by dust inhalation, was recognised, since compensation was awarded to its victims, and means for its prevention were adopted. More persons are employed in the industry to-day than in 1900, but there are now less than 50 cases of plumbism annually, and those cases are not so severe as the 210 cases of 1900 and the 113 cases of 1901. Much less has been heard about phthisis in the industry, known locally as "potters' rot," just as the same condition in the Sheffield cutlery trade is known as "grinders' rot." The disease is now known to result among potters from inhaling dust of flint, which is pure silica. Flint dust occurs in many pottery processes from the time the flints are ground in mills to the use of the powder in mixing the earthenware for the saggars in which the articles are placed during burning. After long periods of occupational life, generally ten years and over, inhalation of fine silica dust results in the formation of fibrosis, or silicosis, in the lungs. This condition may in itself incapacitate or even kill its possessor; but far more frequently the victim falls a prey to tuberculous infection, which in such a case runs a rapid and usually fatal course. The Workmen's Compensation (Silicosis) Acts, 1918 and 1924, permit compensation to be awarded for silicosis in those industries to which those Acts have been applied; but so far only the Refractories Industries have been brought within the scope of the Acts.

The question, however, of applying the Acts to the pottery industry is now under consideration, and a report has just been issued[1] by the Home Office of a medical investigation undertaken to acquire information as to the prevalence of silicosis in this industry. The investigators had had previous experience as members of the Medical Board under the Refractories Industries Scheme; they examined 344 males and 224 females, finding silicosis in 76 males and 11 females. Radiography was employed to assist the clinical inquiry in nearly half the cases. One point of interest emerging is that pulmonary fibrosis was diagnosed by medical examination at an earlier period than that at which silicosis was visible in the X ray picture. This is in contrast with the finding of the Miners' Phthisis Bureau of South Africa, where radiography is claimed to give the most certain indications, but it should be remembered that pottery dust, which may contain flint, ball clay and china clay, may give a different pathological picture. The men and women examined were actually at work; hence tuberculous infection, which rapidly incapacitates for work, was not a feature of the cases seen and no sputum examinations were made. Evidence of tuberculous infection in cases of silicosis must rather be sought among mortality statistics than among operatives at work. No information is given in the report of the average composition and amount of dust present at the different processes, but the varying amount of silicosis found appears to bear a close relation to the known exposure to silica dust. The disease was not to be discovered among those exposed to dust of plaster-of-Paris in modelling and mould-making, or of red marl used for Rockingham ware. On account of their longer periods of occupational life, more males than females were found with silicosis; where the dust was of unmixed flint, 32 per cent. of the men examined were affected; where the dust was composite, 24·7 per cent.; but in other groups the disease was far less prevalent. The broad result indicates that silicosis is liable to occur in many branches of the industry, and exists to-day to a considerable extent. Reference is made in the report to the widespread prevalence of bronchitis among potters, but how far this disease is an independent condition or one coincident with silicosis is not indicated. Modellers, mould-makers and red marl workers, whose work need not bring them into contact with silica dust, could be excluded when a scheme of compensation is being drawn. Dr. E. L. Middleton, in a preface to the report, indicates some of the ways in which the risk can be greatly minimised. But some scheme is required to do immediate justice to the victims of silicosis, and, indirectly, to concentrate attention on means of prevention.

THE Tuberculosis Week-End organised by the two tuberculosis societies opens at 5 P.M. next Friday at the Royal Society of Medicine with a paper by Dr. Strandberg, of the Finsen Institute.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, Nov. 23rd, when Sir Donald MacAlister, the President, will take the chair and give an address. The Council will continue to sit from day to day until the termination of their business.

[1] Report on the Incidence of Silicosis in the Pottery Industry. C. L. Sutherland and S. Bryson, London: H. M. Stationery Office. 1926. Pp. 52. 1s. 6d.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXCVII.

TREATMENT OF DISTENSION OVERFLOW OF URINE.

By the phrases "distension overflow" or "false incontinence" is meant that condition in which the urinary bladder is full and voluntary micturition is impossible, but dribbling of small quantities of urine occurs involuntarily at frequent intervals. The condition is brought about by interference, either mechanical or nervous, with the mechanism of micturition. It occurs most commonly in cases of enlargement of the prostate gland, other common causes in men being urethral stricture and tabes dorsalis. In women it is sometimes due to the retroverted gravid uterus or other pelvic tumours obstructing the outflow of urine by pressure on, and longitudinal stretching of, the urethra. In children a pin-hole meatus or a tight phimosis may be responsible. For the sake of precision, distension overflow following enlargement of the prostate will here be described.

Symptoms of Distension.

The symptoms complained of include thirst, headache, drowsiness, nausea, and the constant wetting of the clothes. There is complete inability to control the escape of urine but usually no pain. The patient is usually 50 or older, appears haggard and looks ill, the ammoniacal smell of decomposing urine is obvious. The tongue is dry and brown, and the mouth foul. The skin feels dry and inelastic. The heart is enlarged and hypertrophied, and the aortic second sound may be accentuated. The abdomen is distended, and the outline of an inverted pear-shaped swelling may be seen and felt rising out of the pelvis. This swelling is "tense-elastic" on palpation, and pressure on it may produce a desire to micturate, but often results only in forcing some urine out of the bladder. The tumour is dull to percussion, while the flanks of the patient are resonant. The swelling may extend above the umbilicus, and even within an inch of the xiphisternum. Per rectum the prostate may be pushed back by the vesical distension, but the gland is usually greatly increased in height so that the bladder base is reached by the examining finger with difficulty, if at all. The median groove on the dorsum of the prostate is obliterated, and the whole gland may project back into the lumen of the rectum. The patient feels ill, is nauseated and constipated, and worried by the constant dribbling of urine, but the urgency of his condition is much less apparent to him than to his medical attendant. The impulse immediately to pass a catheter and relieve the distension of the bladder must be resisted, especially when the patient presents himself in the consulting-room. The risks of the immediate complete relief by catheterisation of a patient suffering from distension overflow are so great that such treatment is always dangerous and may well prove fatal. The sudden removal of the pressure of urine in the renal pelves against which the kidneys have been secreting appears so to upset the equilibrium that instead of continuing to secrete urine only the kidneys allow blood to permeate them, and the urine soon becomes porter-coloured and thick with mucus; or complete anuria may ensue. To avoid this risk the patient ought to be sent to bed immediately, a specimen of blood taken and its urea-content determined. This acts as a guide to his progress under treatment. It is best *not* to pass a catheter at this stage; the incontinence can be disregarded for the moment, every effort being concentrated on combating the uræmia that threatens the patient's life.

Measures to combat uræmia include:—

1. Unrestricted fluids by the mouth, such as water, barley-water, lemonade, weak tea.
2. Saline purges, so that one or two free evacuations are secured daily.
3. Diuretics such as caffeine, theocin, and theobromine may each be tried in turn until it is discovered which increases the urinary output most; the selected drug should then be pushed to secure its optimum action.
4. Excretion through the skin is encouraged by hot packs, hot-air baths, and the injection of pilocarpine. The patient is kept wrapped in blankets, and is well supplied with hot-water bottles.
5. The diet, when the patient can be induced to eat anything, must consist entirely of milk and glucose.

The progress of the patient may be gauged by the improvement in his clinical condition, and by the steady lessening of the urea-content of his blood. When the improvement ceases, then, and not till then, is it time to consider how the distension of the bladder may be relieved.

Methods of Evacuation of the Bladder.

The following technique of evacuation has given the best results in my hands.

1. Pass a large silk-web catheter—e.g., 20 F.—with the most rigid aseptic precautions and the utmost gentleness. The use of the large size catheter and the exercise of great patience in passing it will usually overcome any difficulty in entering the bladder. In the event of failure with the ordinary instrument, the "coudé" or "bi-coudé" catheters may be tried, and if they fail, a silver prostatic catheter of similar size will surely succeed. This last weapon, however, is a dangerous one, and should be used only by an experienced operator.
2. When the catheter has been passed it should be tied in, the escape of urine being first controlled by plugging the exit with a spigot.
3. The height of the fundus of the bladder is now marked with a skin pencil on the abdominal wall, and six ounces of urine allowed *slowly* to escape. The spigot is then reinserted firmly, and the height of the bladder again marked.
4. Four hours later another six ounces of urine are allowed to escape *slowly*, and the height of the bladder marked. If this height is greater than that at the end of removal of the first six ounces, then more urine should be let out slowly till the bladder sinks to a level slightly lower than that indicated by the second mark on the skin. The new level of the fundus is then marked.
5. At the end of every period of four hours the procedure described above is carried out. This gradual emptying of the bladder may occupy several days, the organ gradually recedes into the pelvis, and finally empties.

If during the tedious emptying process the catheter becomes foul, or pus begins to exude between it and the wall of the urethra, then the catheter must be carefully changed. If by accident the spigot comes out, and urine escapes suddenly, the nurse must be instructed immediately to fill the bladder with boric lotion up to its former level. If symptoms of uræmia such as drowsiness, headache, or thirst reappear, or if the tongue become dry, or the urea-content of the blood increase, then the rate of withdrawal of the urine must be slowed and the general measures against uræmia pushed with renewed energy. If any blood appear in the urine withdrawn the rate of emptying must be checked immediately.

It will be seen that this method of evacuation aims at relieving the abnormal "back pressure" by such easy stages that the already damaged kidney function is as little interfered with as possible.

When the bladder is empty the catheter is removed, and the patient may be able to pass water again naturally. The subsequent treatment depends on the state of the patient's general health. Usually operation to remove the cause of obstruction is not advisable till one or two months later, but if the patient seems very well it may be undertaken within a fortnight. Most of these patients will be unable to pass urine satisfactorily pending operation for prostatectomy. They will therefore be better off and safer from another attack of retention if they are provided with a suprapubic drain.

The Avoidance of Trauma and Infection.

Before deciding to adopt the procedure described above I have tried many methods to avoid trauma incidental to the tying in of a large catheter for long periods, and the infection that occurs so frequently

in spite of the most elaborate precautions. Among these methods were: (1) drainage of the bladder with ureteric catheters passed into it either directly when possible or through a catheterising cystoscope; (2) suprapubic drainage with a self-retaining catheter inserted by open operation, and tied into the bladder wall with a purse-string suture; (3) tapping of the bladder suprapubically under a local anæsthetic through a small one inch incision in the skin with a trocar and cannula sufficiently large to permit the passage through it of a large self-retaining catheter. These were abandoned because in (1) the small lumen of the ureteric catheter was liable to become blocked, while the shock, inseparable even from small operations such as were involved in (2) and (3), appeared to prejudice the patient's chances of recovery. I have not tried the device of connecting a catheter tied in the bladder to a reservoir of boric lotion maintained at such height that the outflow of urine is very gradual. Theoretically this ought to be the most successful of all in the treatment of this condition. Its objects are those of the method recommended above, the only difference being that the evacuation of the bladder may be carried out even more gradually by this means than by the procedure I am accustomed to use. The disadvantage of the hydrostatic method is that it requires more apparatus and is rather more difficult to watch than the simple method which I have found successful.

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Special Articles.

SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH.

ANNUAL REPORT.

THE continuous ill-health which led to the resignation of Dr. W. Watkins-Pitchford, the former director of this Institute, prevented him from preparing the annual report for 1925. It has now been issued[1] by Sir Spencer Lister, who on August 1st assumed the post of director, and whose recently augmented staff is as follows:—

Research Division.—Bacteriologist and Pathologist: Dr. J. H. Harvey Pirie. Fellow in Industrial Hygiene: Dr. A. Mavrogordato. Parasitologist: Dr. Annie Porter. Honorary Protozoologist: Prof. H. B. Fantham. Entomologist: Dr. A. Ingram. Biochemist: Dr. F. William Fox.

Routine Division.—Superintendent: Dr. G. Buchanan. Senior Pathologists: Dr. J. G. Becker, Dr. A. Sutherland Strachan, and Dr. F. W. Simson. Assistant Pathologists: Dr. D. Ordman, Dr. L. W. Barlow, and Dr. W. K. Dunscombe.

Sir Spencer Lister reports that the total cost of maintenance of the Institute as a whole, for the financial year ended on March 31st, 1926, was £35,768, an increase of over £6000 on the cost for the preceding year being due to the establishment of new departments in the research division. The cost of maintenance of this division for the year accounted for £16,451, whilst that of the routine division accounted for £19,317. The cost of the research division was met by contributions in equal proportions from the Union Government and the Witwatersrand Native Labour Association. In the routine division the expenditure was fully met by the revenue earned from the sale of vaccines and sera, and from the performance of routine pathological and other examinations for the Government, hospitals, municipalities, the mining industry, and the medical profession.

[1] Published by the South African Institute for Medical Research. P.O. Box 1038. Johannesburg. 1926.

Considerable expansion has taken place during the year in the research division, to which departments of medical entomology and biochemistry have been added, whilst the department of bacteriology has been expanded by the addition of a branch dealing with plague research. In connexion with this latter, field investigations have been carried out at a camp maintained in the Orange Free State Province. A survey of the mosquito and molluscan carriers of malaria and bilharzia, respectively, has also been initiated and a field officer appointed for this purpose. This work will probably be extended at an early date. A new arrangement has been entered into with the University of the Witwatersrand under which the Institute has become responsible, through its officers, for the staffing and development of the department of pathology and bacteriology of the medical school. The additional laboratories and other buildings, the erection of which was commenced two years ago, have now been completed and have been brought into commission. New roadways are also being made, and the whole of the grounds enclosed within a boundary wall and railing, these improvements having been made possible by a grant of £5000 for this purpose from the Witwatersrand Native Labour Association.

Activities of the Research Division.

Plague.—Some ten species of veld rodents have been tested for their susceptibility to plague, and all have been found to be more sensitive to infection than the guinea-pig or the black rat. The species of practical importance in the spread of plague on the high veld are the Lobengula gerbille, the multimammate mouse, and the ground-squirrel, and in lower, more bushy country, the striped-mouse. Lobengula gerbilles have been found to be very cannibalistic in their habits, readily eating any sick or weakly member of their community. Plague is readily transmitted amongst them by eating infected comrades, and evidence has been adduced suggesting that plague may be actively spread amongst them by feeding as well as by fleas. It is not thought likely, however, that spread by feeding is a method of any importance in other species of veld rodents.

Cuti-vaccination, which has been found satisfactory in the prevention of anthrax, was found to be of no protective value against plague. Sensitised vaccines were not found to be of any greater value than ordinary killed vaccines either in prophylaxis or treatment, and mercurochrome was found valueless.

What is believed to be a new disease, caused by a hitherto undescribed Gram-positive motile bacillus, has been found in gerbilles; the essential pathological lesions are extensive necroses in the liver and spleen with bacteræmia. It is proposed to try on a large field scale whether or not the disease can be turned to practical use for the extermination of gerbilles.

The entomological work done during the year has been concerned entirely with the investigation of plague, and has been mainly confined to the collection and examination of the ectoparasites of the small carnivora and rodents of the veld.

Industrial Hygiene.—An attempt has been made to correlate underground conditions with the incidence of silicosis by studying the historical aspect of the disease as met with on the Witwatersrand. Methods for the further improvement of underground conditions with respect to dust prevention, and for the closer control of tuberculosis, have been investigated. Additional studies have been undertaken concerning the part played by bacterial infections of the lungs as an important factor in the production of silicosis. A consideration of the evidence available suggests that tuberculosis is now the dominating factor in the disabling and fatal form of miners' phthisis now met with on the Witwatersrand, and that it is quite as important to study environmental conditions from the point of view of tuberculosis as it is from the point of view of air-borne phthisis-producing dust. It appears probable, on the strength of experimental and

autopsy findings, that dust inhaled can facilitate secondary infections, tuberculous and otherwise, before it has produced a recognisable clinical silicosis. From the point of view of underground conditions estimations of air-borne dust afford a valuable measure when dust concentration is comparatively heavy, but are not so useful when dust concentration is comparatively light. A steady fall over a period of years in dust concentration is not associated with a corresponding fall in silicosis incidence. An explanation suggested is, that after air-borne dust has fallen to a concentration at which it will not produce disabling lung lesions per se, it still facilitates chronic respiratory infection, particularly when much water is used for dust-laying.

Schistosomiasis and other fluke infestations have been investigated. A total of 1827 snails was examined for flukes during the year. Some experimental work with fluke larvæ obtained from *Limnæa truncatula* established that this snail, which is the common host of liver fluke of sheep in Europe, was also a host of *Fasciola hepatica* in South Africa.

Parasites of Plague Rodents.—A beginning has been made on a survey of the animal endoparasites found in rodents that carry plague, and some interesting results have already accrued, including the finding of a fluke in the intestine of the gerbille, *Tatera lobengulæ*.

Routine Division.

The total number of investigations carried out in the routine division of the Institute during the year ending Dec. 31st, 1925, was 52,844. This is an increase on the figure for 1924 of 11,011. Examinations for *B. pestis* in humans totalled only 78 in 1925, as against 193 in 1924. The relative number of positive results is also less this year (21·8 per cent., as against 33·7 per cent. in 1924).

Post-mortem examinations made on behalf of the Johannesburg General Hospital numbered 342, as compared with 428 in 1924.

The routine tests done in the biochemical department continue to increase steadily, the growing appreciation of the value of blood analysis being specially notable.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Patent Medicine Nuisance.

THE very large output of German chemical factories, although gratifying from the national point of view, is in some respects less beneficial to the medical profession. Compounds are invented in such numbers that it is almost impossible for the average practitioner to follow their progress. The profession is drowned in advertisements of new products, and there is hardly one day all the year round when the doctor does not receive by post an advertisement of some new compound, with information concerning its effects. Sometimes this information is supplied by medical men of good standing—even by hospital physicians and their assistants; sometimes it is written by people who are little known to the profession. Often samples are sent with the circulars, and quite often agents of the various factories call at the consulting-room of the medical man to draw his attention to the new remedy. These agents are sometimes younger medical men who for financial reasons have not yet been able to settle down; sometimes widows or children of deceased practitioners are employed in the work, so that it is difficult not to receive them. Most of the new compounds—whether in the form of tabloids for oral use or as ampullæ for subcutaneous injection—soon disappear to make room for newer compounds advertised in the same way. Some, however, become familiar to the profession, and medical men are now accustomed to prescribe tabloids and ampullæ produced in bulk by the chemical factories, instead of having their prescriptions dispensed according to the requirements of individual patients. The apothecaries, in consequence, are losing their dispensing skill, as their work is chiefly the sale of ready-made compounds. This state of affairs is causing chemists to ask what is the good of their learning and studying pharmacy for several years if at the end of it all they are to become mere dealers in the products of chemical works. A proposal has been made to convene a committee of medical men, hospital physicians, pharmacologists, and apothecaries, so that measures may be devised to remedy the nuisance.

The Virus of Scarlet Fever.

Prof. Ulrich Friedemann, physician-in-chief to the department of infectious diseases at the Virchow Hospital, recently read a paper before the Berlin Medical Society on the transmission of scarlet fever. According to researches of the Dicks, a streptococcus termed *S. hæmolyticus scarlatinæ* is the causal organism of the disease. Prof. Friedemann, who has had a large number of scarlet fever patients in his department, is now able to give the results of his own investigations into the subject. He found that when a culture of streptococci was inoculated into the tonsils of an assistant (a willing coöperator in the experiment) typical scarlet fever developed, and the patient's serum gave excellent results in the treatment of scarlet fever in others. The disease, he states, is transmitted by droplet infection from secretions of the mouth. The old idea that scales from the skin of convalescents are responsible for infection is a mistaken one. Prof. Friedemann examined the scales of 50 patients, and only in one did he find streptococci in the desquamation; all the rest were sterile. He ascertained, however, that the streptococcus is not only present in the tonsils and in the mouth, but also in purulent secretions such as pus from a complicating otitis media. The streptococcus was further found on the walls of sick-rooms, on the beds, curtains, and utensils used by the patients, and in great quantity also in the air of the rooms. These results led him to recommend as absolutely necessary thorough disinfection of sick-rooms at the end of the illness. On the tonsils streptococci were often present six weeks after the attack was over, although they did not cause any symptoms. The time of isolation should, therefore, be longer than the usual six weeks, for children sent home thus prematurely may easily infect healthy members of their families. Before being dismissed from a hospital, convalescents should be kept for some time in a separate room where they are safe from streptococci in the air.

Death of Prof. Heubner.

The death is announced of Prof. Otto Heubner, who formerly occupied the chair of pædiatrics at Berlin University. His principal service to medicine was that he invented new methods of feeding infants, and gave warning against the too lengthy sterilisation of milk. He was also one of the first to recognise the great value of Behring's discovery of the use of serum in diphtheria, which he could administer on a large scale in his department in Leipzic. A standard work on the diseases of children was published by him in 1903. Prof. Heubner was born in 1843 in Vogtland, Saxony, and throughout his life showed himself a Saxon in speech and temperament. In 1894 he succeeded Prof. Henoch in Berlin, and became the first ordinary professor of pædiatrics at a Prussian university. Up to this time there were no chairs in this or any other special branch of medicine, but Prof. Heubner's struggle for the acknowledgment of pædiatrics has so far succeeded that now nearly every German university appoints an ordinary professor to teach the subject. Prof. Heubner remained at work in Berlin until 1913, then retiring to live in Dresden, where he has now died at the age of 83. His son is the well-known professor of pharmacology at the University of Göttingen, Prof. Wolfgang Heubner.

Medical Women.

According to recent statistics the number of qualified medical women in Germany is 327, of whom

152 are married. It is interesting to know that 68 of them are married to medical men; 25 of the 31 medical women in Munich and 8 of the 15 in Frankfort have doctors as husbands. The unmarried belong for the greater part to the younger generation who have recently settled in practice. Medical women, as a rule, prefer residence in large cities to smaller towns or the country. In Berlin 5·6 per cent. of the profession belong to the female sex; in the medium towns the percentage is much smaller, and in the country there are scarcely any medical women engaged in practice.

The Berlin municipal authorities have decided that patients in the municipal hospitals who supply blood for purposes of transfusion shall receive an allowance of M.10–30 (10*s.* to £1 10*s.*) according to the quantity of blood taken. In this way the difficulty of getting volunteers may be avoided.

The Trustees of the Rockefeller Foundation have declared their willingness to give 250,000 dollars to the Munich Institute for Psychical Research, for the erection of a new building, on condition that 15,000 dollars are provided from other sources for its maintenance and working. The city authorities of Munich have given already an area in one of the suburbs to the institute without demanding payment. Prof. Kräpelin, until his recent death, was the institute's director.

The city of Nürnberg and several other cities have decided that henceforth no advertisements of breweries shall be allowed in public places, in municipal buildings, and in tramcars. They point out that by these advertisements alcoholism is promoted, and that the city has to spend much more money for the care of drunkards than it gains from the advertisements.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Rotunda Hospital.

THE tenure of office of Dr. Gibbon FitzGibbon as Master of the Rotunda Hospital having come to an end, Dr. Bethel Solomons has been elected to succeed him. Dr. Solomons was assistant Master of the Rotunda Hospital during part of the Masterships of Dr. E. Hastings Tweedy and Dr. Henry Jellett, and for the past 12 years has been gynæcologist to Mercer's Hospital. He has written a "Handbook of Gynæcology," now in its second edition, and has edited Dr. Tweedy's "Practical Midwifery." He has been President of the Section of Obstetrics of the Royal Academy of Medicine in Ireland, President of the Dublin University Biological Association, and is at present Vice-President of the Royal College of Physicians of Ireland. In his younger days he was an International Rugby player, and he keeps up an interest in athletic sport. His energy and personality cannot fail to make his influence as Master of the Rotunda powerful in the obstetric world.

University College Medical Society.

At the opening meeting of the University College Medical Society, held last week, Dr. E. T. Freeman, the President, read a thoughtful paper on Medicine from Three Angles. He discussed the changes that had taken place in the practice of medicine and in the relation of the public to medicine in the past 15 years. There had been a gradual diminution in the incidence of the infectious diseases and of the great killing diseases, and medicine nowadays was mainly concerned with investigating slight departures from health. The greater complexity of investigation required a large extension of hospital treatment, so that the hospitals, originally intended as refuges for the poor, were now largely used by the poorer middle-class, a class able to bear a share of the cost. Dr. J. F. O'Carroll, in proposing a vote of thanks, discussed the real value of an increased expectation of life, and urged young medical men to pursue their profession in a spirit of perfect honesty toward themselves and their fellow men. The vote was seconded by Mr. T. Hennessy, who criticised the attitude of the public and of the legislature toward questions of health. The new county hospitals were, for the most part, indistinguishable from the old workhouses, and were as backward as they were 30 or 40 years ago. Medical inspection of school-children was only carried out in two towns in the Free State. The State was unwilling to pay adequate salaries for scientific services. It was recently proposed to appoint a whole-time bacteriologist to the Ministry of Agriculture, and the person appointed, who should be a Bachelor of Science or hold an equal qualification, was to receive the salary of £100 a year. Dr. R. J. Rowlette and Dr. W. D. O'Kelly also spoke.

Sir Robert Jones in Dublin.

Sir Robert Jones paid a flying visit to Dublin last week in order to address the meeting of the National Children's Hospital. He urged the transfer of such institutions to the country, and spoke of the necessity of giving fresh air and sunlight to sick children. In the evening he was entertained at a special dinner given in his honour by the Rotary Club. Nearly 200 guests were present. In an address Sir Robert Jones said that he estimated that there were 12,000 or 14,000 cripples in the Irish Free State. Twenty-five per cent. of cases of deformity were due to rickets, and about 50 per cent. to tuberculous disease. The medical profession now knew enough, if it was given the opportunity, to eradicate these two diseases in a small number of years. About 50 per cent. of the cases of tuberculosis of the bones was due to milk and 30 per cent. to direct contact with the human consumptive. In England it had been found that one out of ten specimens of milk examined contained living tubercle bacilli. Sir Robert Jones thought that the work done in the Dublin hospitals which he had visited that day was splendid; but the conditions in which the surgeons in them worked were really almost pathetic. The surgeons and physicians were struggling to make the best of a bad machine. They were trying to imitate the sun by bringing in ultra-violet ray lamps. His feeling was that the best thing for them to consider with regard to these children's hospitals was to get them out into the country.

WIRELESS IN HOSPITALS.—The *Daily News* scheme for equipping the London hospitals with wireless has now been completed. Since the fund was instituted in May last year 122 hospitals have been equipped, and 13,456 headphones and 479 loud speakers provided at a cost of a little more than £25,000.

THE LATE DR. W. R. POLLARD.—By the death of Dr. William Robert Pollard, at the age of 82, Blackburn has lost its oldest medical practitioner. He was a native of the town and was educated at the local grammar school, and after studying medicine in Dublin, qualified as L.R.C.S.I. in 1873, and M.R.C.P. Edin. in 1882. Returning to Blackburn, he started work there on his own account. Besides carrying on a large general practice he was medical officer to the Blackburn Union Infirmary from 1888 to 1912, by which time the calls on his services had grown so greatly that he had to give up this post. At the time also he was medical officer to the Church and Oswaldtwistle District Council, and honorary medical officer to the Blackburn Ragged School and the Blackburn Orphanage. His death left one ambition unfulfilled: he had wished to complete half a century's service as medical officer to the Blackburn Rural District Council—in another year he would have done so, for his appointment dated from 1877. The council and community greatly valued his services. On his retirement from the Blackburn Union Infirmary the staff presented him with a handsome gift of plate. He was very popular in the town and took a great interest in its affairs. Dr. Pollard leaves a widow, three married daughters, and two sons in the medical profession, one of whom is in practice in Blackburn and the other in Halifax.

Public Health Services.

RECORD CARDS AS AN INDEX OF EFFICIENCY.

A PSEUDONYMOUS correspondent to the *Times* recently described the examination of the record cards kept by insurance practitioners as a "medical inquisition." He thinks that "insurance doctors may be unjustly fined" as the result of an estimation of the number of entries on a sample of cards taken haphazard. The method he describes is what is known as a dipping audit which enables the Ministry of Health to classify practitioners as to whether they are or are not keeping records. We understand that where there is reason to doubt that the practitioner is neglecting this part of his contract a further stringent examination is made of at least 25 per cent. of his cards and in the estimation of the value of the records various tests are applied, such as the character of the clinical notes, the number of attendances given in certain cases of acute illness, and the average number of attendances and visits given to his patients generally. Disciplinary action is not likely to be taken until a very full investigation has been made. It can hardly be denied that the record cards constitute some index of a practitioner's efficiency.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1925 statistics of two county boroughs, two large urban districts, and two cities :—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.	
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Heart disease.	Infant mortality.	Maternal mort. from childbirth.
Croydon C.B. .	199,300	17·1	10·9	0·92	1·60	1·8	1·3	55	3·8
Hastings C.B..	60,470	13·0	14·5	1·39	2·11	2·6	2·3	40	2·6
Willesden U.D. ..	172,503	16·0	9·8	0·86	1·40	1·9	1·3	62	2·2
Tottenham U.D. ..	153,600	18·0	10·4	0·90	1·39	1·9	1·9	54	2·2
York C.	84,630	18·9	12·4	1·26	1·41	2·0	1·8	86	1·8
Carlisle C. ..	55,160	18·8	13·5	1·02	1·34	2·2	1·7	78	2·9

Croydon.

Dr. H. P. Newsholme describes an outbreak of food-borne paratyphoid B fever, which caused the illness of about 80 persons in Croydon and district. The first case was notified on Sept. 5th, and as the patient had been for a fortnight's holiday to the seaside it was at first assumed that she had contracted the infection elsewhere. She was the head assistant of a confectioner's shop, and inquiries showed that nine out of a total staff of 15 had had similar attacks beginning between August 31st and Sept. 2nd. None of the Croydon cases ended fatally, although some had severe complications, including sharp hæmorrhage from the bowels. Exhaustive inquiries were made into the exact source of infection, and ultimately the outbreak was traced definitely to veal and ham pies and fancy cakes infected at a late stage of their preparation by a pastrycook, who had suffered from an unrecognised attack of the illness. The origin of the pastrycook's illness could not be traced, but it was within the bakery, either from infected materials or an infecting person, and it may have accounted for some earlier cases occurring in the district during July and August. No case was traced to the pastry of this firm subsequent to the withdrawal of the infecting pastrycook from work. Some of the lessons from the outbreak are: The need for better washing arrangements on such premises; the need for scrupulous care in the cleansing of utensils; and the need for means whereby every process involving personal handling is followed by heating of the food-stuff sufficient to prevent infection. This particular firm used bacterial virus for the extermination of rats and mice, and although it was possible to exclude this as a cause of the present outbreak, Dr. Newsholme emphasises the necessity of protecting food from this source of contamination. He further suggests that the trade might with advantage consider the adoption of some form of industrial insurance for the maintenance of employees who are obliged to leave work because they are carriers of infectious disease. The main conclusions arising out of the epidemic have been referred to the Bakery and Confectionery Section of the London Chamber of Commerce, the National Association of Master Bakers and the Croydon Master Bakers Association.

The only case of diphtheria among the staff of the hospital was that of a ward maid who had not been Schick-tested and immunised as is the custom for newly engaged members of the staff. Arrangements have been made with the Croydon General Hospital for the use of their light clinic. Thirty-eight cases of malnutrition, rickets, and other diseases were under treatment during the year, and the results were encouraging. Coöperation with the same hospital has led to the establishment of an orthopædic scheme, which includes clinics for massage, remedial exercises and electric treatment, and in-patient treatment, when necessary, at the St. Nicholas and St. Martin Orthopædic Hospital, Surrey. During 1925 there were 3406 births, and 609 expectant mothers attended the antenatal clinic. A course of six lectures to midwives was delivered by Dr. J. A. Willett, of the City of London Maternity Hospital. Of the eight cases of puerperal sepsis notified six proved fatal. There were 22 cases of ophthalmia neonatorum, in three of which vision was impaired.

In spite of increasing activity in private and public enterprise, there is much leeway to be made up in housing. Over 5 per cent. of 3492 working-class houses inspected were found to be overcrowded. The standard adopted was that of the local by-laws for houses let in lodgings—viz., 360 cubic feet in bedrooms for each person over ten and 400 cubic feet where a room is used both as living and sleeping room, with 250 cubic feet for persons under ten. The municipal lodging-house has 101 cubicles for lodgers. The charge per night is 9*d.* and the nightly average of lodgers was 99. The receipts for the year were £1346 and the expenditure £1485. Of 94 samples of milk examined for tubercle one was found to be infected, and as a result one aged cow was found in a borough cowshed with a tuberculous udder. It was subsequently slaughtered and compensation at one quarter of the value (£7) was paid under the new Act. Of 99 samples of ordinary milk examined for bacteria, 87 conformed to the Grade A standard, but a large proportion had been subjected to commercial pasteurisation.

A five years' survey of the school work shows great progress. Thus the percentage of verminous children, 13·2 in 1921, has come steadily down to 8·0 in 1925, and the children treated for dental trouble numbered 1210 in 1921 and 3357 in 1925. The work will be greatly facilitated by the opening of "admirable clinic premises" in 1926. Dr. Newsholme points out that it is difficult to gauge the changes in physical fitness resulting from school medical work owing to differences in standard due to changes in the medical staff. He is able, however, for two schools, to give a comparison of average heights and weights in 1905 (when Dr. Meredith Richards was school medical officer

and in 1925. The comparison shows a clear general increase both in height and weight among boys and girls at all age-periods in these schools.

Hastings.

Dr. G. R. Bruce reports that the most important recent event has been the opening of the new venereal disease clinic in January, 1924. This building has been designed on model lines, is entirely adequate for its purpose, and has been visited by many officers of other authorities. The water-supply is insufficient for the increasing needs of the community and the Council is looking to the chalk area in the Cradle valley to the east of Eastbourne to provide a satisfactory supply sufficient for many generations. Dr. Bruce points out that many elderly or retired persons and invalids come to live in Hastings and help to swell the death-rate from cancer and circulatory and respiratory diseases. When the correction factor (0·718) is used the death-rate of 14·5 becomes 10·4. Antenatal work is as yet only carried out on a small scale. There were 783 births, and 72 expectant mothers attended the two antenatal clinics. The municipal cases admitted to Fern Bank maternity home numbered 35, attendance at one of the antenatal clinics being a condition of admission. An orthopædic scheme in connexion with the Royal East Sussex Hospital was under consideration during the year.

Willesden.

Dr. George F. Buchan reports that there were 37 notifications of ophthalmia neonatorum—a case rate of 13·4 per 1000 births. Private doctors attended in 16 cases, midwives in 17, whilst the remaining four were born in hospital. In one patient one eye was permanently injured and two cases were under treatment at the end of the year. Proceedings were taken against a doctor and a midwife for failure to notify. The case against the doctor was dismissed, but the midwife was fined £20 and subsequently struck off the roll. At two of the three schools for mothers the work is hampered by the unsuitability of the premises, but a large number of health talks and demonstrations were given throughout the year. No general orthopædic scheme has yet been adopted, but instruments are provided in necessitous cases and crippled children are sent to outside institutions. The school premises for the physically defective at Furness-road are unsatisfactory as there is no playground available for open-air classes for the crippled children. The classes for stammering children are being extended. The medical staff of the department are taking part in the inquiries into defective vision and anthropometry instituted by the Board of Education. Dr. Buchan complains of the cumbersome procedure, in the existing state of the law, which is necessary in order to secure a reasonable standard of repair of dwelling-houses.

Many interesting matters are dealt with in appendices to the report. Appendix H. deals with mentally defective children and dull and backward children. Dr. Buchan draws attention to the fact that the definition of the mentally defective child in the Education Act of 1921 differs from that given in the Mental Deficiency Act of 1913. He thinks that "mental defect" in the Education Act may mean an educational disability only and that there is, therefore, no power to send a child to a special school unless it can be certified under the Mental Deficiency Act of 1913. Correspondence with the Board of Education is given, which shows that the Board differs from this view, but as yet there has been no decision on the matter by the courts. The question arose owing to the refusal of a parent to allow his child to be sent to the Leinster-road mentally defectives' school. Dr. Buchan also points out that 40 per cent. of the children at this school are educationally retarded and that 60 per cent. are mentally defective within the meaning of the Mental Deficiency Act. The 40 per cent. could be transferred to classes for dull and backward children if such were available, and it is suggested that such classes should serve groups of schools and should be established at suitable centres throughout Willesden. In another appendix it is shown that the Pound Lane site, on which there is a proposal to establish an open-air school, is not large enough to provide for the needs of Willesden. The proposed site of two acres would be large enough to accommodate the 100 children at present attending the physically defective schools, but it is shown that there are about 600 children in Willesden who need this provision.

Another appendix deals with the school dental scheme of October, 1924, under which a fee of 2*s.* 6*d.* was to be charged to the parents for the re-treatment of routine cases. A table is given which shows that during a year's operation there were 13,482 routine inspections, and the number of children found to require treatment was 9431. Of these only 898 received treatment at the clinics; about 100 were treated elsewhere. Dental treatment at the Willesden schools is chiefly given to the most neglected and difficult type of case, and is largely of a palliative nature instead of being preventive and constructive in accordance with the principles laid down by the Ministry of Health. A revised scheme was adopted by the Education Committee in February, 1926. Dr. Buchan points out that an addition of one dentist to the staff should be made during 1927 and other increases in succeeding years as required. An appendix by Dr. H. Haldin-Davis, dermatologist to the council, deals with light treatment, which was established in November, 1925. Some improvement was noted even in the six and a half weeks before the end of the year and striking results were obtained in severe cases of asthma and alopecia areata. The type of lamp used is a flaming carbon arc of Siebe and Gorman working at 30 amperes. Dr. Bessie R. Mackenzie gives a history of health visiting in Willesden. During 1902, the year preceding the appointment of the first health visitor, the infant mortality-rate was 130. There are now 20 health visitors and the infant mortality-rates for the last four years were: 59, 53, 73, and 62. During the last six years the number of infants breast-fed for nine months has gone up from 15 per cent. to 19 per cent., while the number solely bottle-fed from birth has gone down from 6 per cent. to 4 per cent. In a further appendix Dr. W. D. Champneys reviews the present position of work against cancer, and expresses the opinion that by far the most important measure for securing the early diagnosis and treatment of cancer—and one that has not been so far tried in this country—is the cancer clinic for free diagnosis. Such a clinic, he considers, should be established by the council.

Tottenham.

Dr. David C. Kirkhope says that many houses contain two or more families, and occasionally a family in a single room, notwithstanding that they are both able and willing to pay for more commodious dwellings. There are 2800 families upon the register of those who seek houses upon the council's estate. Tottenham has no land available unless the houses are of the large tenement type, which system Dr. Kirkhope does not recommend. Adequate means of transit from Tottenham to the metropolis are not available. The solution of the housing difficulty appears to lie in the extension and enlargement of the underground system. The pollution of the River Lea below Tottenham lock has received the consideration of the council on several occasions, and it is now hoped that the authorities concerned with the river will take action. Dr. Kirkhope goes on to complain of the nuisance caused by the tipping of refuse, both by his own and neighbouring authorities.

There were 17 notifications of encephalitis lethargica with eight deaths. The home treatment of scarlet fever is encouraged in Tottenham and the use of scarlet fever antitoxin for the inoculation of susceptible contacts has been tried with partial success. The

immunity conferred by the intramuscular injection of 5 c.cm. of concentrated serum only seems to last for about a fortnight. In two cases mothers who declined inoculation contracted the disease, and rendered the attempt at immunisation useless. A better result was obtained in the case of a school in which there were recurring cases of scarlet fever which ceased after the immunisation of half of the scholars with the consent of their parents. Grade A (tuberculin tested) milk is now supplied to mothers and children through the centres and to the creche. There were 338 new cases at the antenatal clinic, the total births numbering 2756. The scheme for dealing with school-children who need operative treatment for tonsils and adenoids has given entire satisfaction. A contract has been made with the North Middlesex Hospital. The tonsils are enucleated under an anæsthetic in the forenoon. Later in the day the children are taken home in an ambulance in the custody of a nurse. If there is any apprehension of after trouble they are retained in hospital for a longer period. Good results are also being obtained by ionisation at the clinic for otorrhœa, which was started two years ago and is under the charge of Dr. A. R. Friel. There is still a large percentage of refusals by parents of dental treatment for the children.

York.

Dr. P. R. McNaught reports that the corporation during the last five years have built 367 houses at their Tang Hall estate, and that 312 houses were in course of erection at the end of 1925. Nevertheless, there are 1400 applicants on the waiting-list for houses and developments in the confectionery trade and the erection of a sugar-beet factory just outside the city will increase the demand. Many distressing cases of overcrowding are cited. An antenatal clinic is conducted by the Infants' Welfare Association and was attended by 113 women during the year. There were also 129 attendances at the antenatal clinic of the maternity hospital, at which 271 mothers were confined during the year. The neonatal mortality was high (43) and just half the total infant mortality. Forty-six samples of milk were submitted to bacterial examination and 19 were reported to be dirty and unfit for consumption. Six of the 19 were samples of the milk produced at the municipal sanatorium. Two of the 36 samples contained tubercle bacilli.

Carlisle.

Dr. Joseph Beard reports that three out of 26 samples of milk were found to contain tubercle bacilli. As a result four milch cows were eliminated from the herds. It is difficult to estimate the real shortage of houses. Dr. Beard puts it at 1000. An inspection of the Currock estate of the corporation during the year showed that 50 out of 222 tenants were subletting. Seven of the houses were found to be seriously overcrowded and a number of others were dirty. The shortage of houses has been aggravated by the falling off of building by private enterprise since 1907 and the demolition of many tenements in carrying out reconstruction schemes. The only institutional provision for tuberculosis is 20 beds at Blencathra Sanatorium. These are intended for early cases, but advanced cases are also admitted for short courses of instructional treatment, and some cases of surgical tuberculosis are transferred to Blencathra from the Cumberland Infirmary. There were 166 new cases at the antenatal clinic, the total births in the city being 1045; the neonatal mortality-rate was 37, nearly half that for infant mortality. The city council have employed a veterinary surgeon to inspect cows for the last 27 years, whose practice it is to examine all the new cows in the city within three days of their purchase. During 1925, 146 cows were so examined and 14 were returned to the would-be vendors for various reasons. The city is exceptional in having a satisfactory public abattoir.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Edmonton ..	10,447	9,605	3,294	15,292	31·0
Cambridge ..	7,232	6,260	2,246	2,358	5·7
Colchester ..	—†	5,863	1,818	3,129	24·0

* Excluding uncleanliness and dental defects.
† Not given.

Edmonton.

In Edmonton there is close coördination between the child welfare work and the school medical service, for the dental clinic serves both infants and school-children as does the orthopædic clinic for massage and muscle re-education, and Dr. H. W. Harding, the school medical officer, is on the committee for the local crèche. There is, however, no definite link with the Juvenile Employment Committee nor with the factory surgeon, and the local work of the guardians, the County Council, the Home Office, and the general hospitals is unrelated to that of the local education authority. The large variation from previous years in the numbers of defects found during 1925 is accounted for by the different standards adopted by the new medical inspector, Dr. Marjorie Dalby; thus, there were 280 cases of functional heart conditions and anæmia noted as against 39 for 1924, and enlarged tonsils were noted in 610 cases compared with 173 in 1924. There is no open-air school. Dinners to the number of 52,466 were given to school-children during the year and 1375 16 oz. bottles of cod-liver oil were provided in addition to milk meals, but it is doubtful if the end results of wholesale extra dieting compare favourably with the benefits and educational value of an open-air régime. No organiser of physical training is employed. Special classes are held for the partially blind and the partially deaf while mental defectives are educated at a special school in Enfield, but Dr. Harding believes the atmosphere of the elementary school is preferable for cripples.

Cambridge.

The apparent smallness in the incidence of defects in Cambridge is largely accounted for by the fact that all dental conditions are excluded from Dr. A. L. Laird's report to be dealt with separately by Mr. W. B. Grandison, the public dental officer. Statistical tables presented by Dr. Laird and figures supplied by Dr. A. Mabel Gurney show evidence of improved physique in both boys and girls and the percentage of children in whom no defect was found was higher in 1925 than ever before, while the proportion of children found to be clean was the highest yet recorded. There has been a marked and steady decrease in otorrhœa from 3·7 per cent. in 1911 to 0·7 per cent. in 1925, and in deafness from 5·6 per cent. in 1911 to 1·9 per cent. in 1925. Dr. Laird regrets that although the plans for the new open-air school have been approved, a site purchased, and bricks deposited ready for use, no further action is being taken for reasons of economy. Meanwhile, the temporary open-air school established in 1916 continues to do excellent work, which is further extended by the helpful activities of the Invalid Children's Aid Association which sent 46 children to the seaside during 1925. An orthopædic scheme is now working in conjunction with Addenbrooke's Hospital, which also carries out much of the general treatment required by the local authority. Much useful information is given by Mr. Grandison, whose boast it is that "there are 5000 school-children in Cambridge who now show no evidence of dental caries . . . . due principally to active dental treatment."

Colchester.

Dr. W. F. Corfield surveys the changes that have taken place in the school medical service during the past five years. Cleanliness has markedly improved as have also the conditions of clothing and boots. Malnutrition, anæmia, rickets, and spinal curvatures all show lessened incidence, but enlarged tonsils and adenoids were more prevalent in 1925. This increase, perhaps, may be more apparent than real, since special attention was focused on the results of operation in a special inquiry by Dr. R. W. Cushing. At the same time, Colchester is not alone in reporting bigger incidence of morbid throat conditions during this year. Blepharitis and conjunctivitis are less frequent owing to increased cleanliness and relief of eye-strain by glasses, but the numbers of scalp ringworm cases still keep high, though the increased facilities for X ray treatment at the Essex County Hospital should materially reduce them. Routine medical inspections were attended by 77 per cent. of parents. Special classes are held for stammerers and for cases of spinal curvature, and under the orthopædic scheme Mr. W. Howell, of Brookfield Orthopædic Hospital, Walthamstow, visits the clinic periodically. Special classes are also open for mentally defective children and for the partially blind, while open-air classes are held during the summer at most of the elementary schools.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 30TH, 1926.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 131 (last week 126); scarlet fever, 1924; diphtheria, 1157; enteric fever, 48; pneumonia, 828; puerperal fever, 45; puerperal pyrexia, 114; cerebro-spinal fever, 10; acute poliomyelitis, 78; acute polio-encephalitis, 9; encephalitis lethargica, 33; continued fever, 1; dysentery, 4; ophthalmia neonatorum, 114. There were no cases of cholera, plague, or typhus fever notified during the week. No cases of small-pox were notified from London or the southern counties. The cases of poliomyelitis and polio-encephalitis taken together are less numerous than last week, the counties reporting more than 3 being London 15 (Deptford 2, Islington 4, Kensington 1, Lewisham 1, Paddington 1, Marylebone 1, Southwark 1, Wandsworth 4); Kent 5 (Broadstairs 4, Faversham 1); Leicester 8 (Leicester C.B. 2, the remainder scattered over five urban and rural districts); Warwick 5 (Birmingham 1, Leamington 2, rural districts 2).

Deaths.—In the aggregate of great towns including London, there was no death from small-pox, 1 (0) from enteric fever, 7 (1) from measles, 3 (0) from scarlet fever, 14 (4) from whooping-cough, 43 (8) from diphtheria, 124 (30) from diarrhœa and enteritis under 2 years, and 71 (15) from influenza. The figures in parentheses are those for London itself.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. A. G. Biggam is secd. for serv. under the Foreign Office.

Maj. J. J. Magner is restd. to the estabt.

Capts. A. Jackson and J. W. C. Stubbs to be Majs.

The undermentioned Capts to be Majs.: G. D. Jameson, J. G. Ronaldson, W. D. Arthur, K. P. MacKenzie, R. R. G. Atkins, R. H. Leigh, J. H. G. Hunter, W. G. Shakespeare, O. C. Link, E. E. Holden, R. G. Martyn, R. H. Hodges, and H. W. Browne.

Capts. Sarat Chandra Basu and Pearey Lall Whig relinquish their temp. commns.

The King has approved the retirement of Col. J. H. McDonald and Lt.-Col. D. McCay.

TERRITORIAL ARMY.

Maj. C. D. Mathias, having attained the age limit, is retd. and retains his rank, with permission to wear the prescribed uniform.

Capts. E. L. Sandiland and H. T. Bates to be Majs.

Maj. George Young, late R.A.M.C., T.F., to be Capt., and relinquishes the rank of Maj.

Lt. H. V. Forster to be Capt.

J. W. Eames to be Lt.

The King has conferred the Territorial Decoration upon Majs. W. C. Gunn, R. Henry, and F. E. H. Keogh.

ROYAL AIR FORCE.

Temp. Lt. V. G. Pedley, General List (Army), Dental Surgeon, is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

Flying Officer G. J. Hanly is promoted to the rank of Flight Lt.

DEATHS IN THE SERVICES.

Major Charles Louis Williams, I.M.S. (retd.), who died suddenly at Banstead, Surrey, on Oct. 31st, was a Liverpool man, and studied at Liverpool and the University of Edinburgh, where he graduated M.B., C.M. in 1886 and M.D. in 1889. He also took the diploma of M.R.C.S. Eng. in 1888, and the D.P.H. Camb. in 1896. He was Holt Scholar at University College, Liverpool, and lecturer in the Liverpool Tropical School, and served for a period as house surgeon in the Royal Infirmary, Liverpool, sometime afterwards becoming medical superintendent to the Booth Shipping Line. Entering the Indian Medical Service, he served for 17 years in India and became surgeon to the General Hospital, Madras. On the outbreak of the late war he was appointed to the Hospital for Indian Troops at the Pavilion, Brighton, and after the departure of the Indians held several important surgical posts, eventually acting as a surgeon specialist. After service in connexion with the Ministry of Pensions, Major Williams retired two years ago. He leaves a widow and three daughters.

MEDICINE AND THE LAW.

Contamination of Meat by Flies: Butcher's Successful Appeal.

A PARAGRAPH in the *Times* records a successful appeal to the Middlesex Sessions by an Acton butcher, who had been fined £2 and ordered to pay £5 5s. costs on a conviction for neglecting to guard meat against contamination by flies. The brief report states that at the hearing of the appeal butchers gave evidence that glass fronts to shop windows encouraged flies, and that open windows were better, as a through current of air kept the flies on the wing. Then follows the information that the Court found that the defendant did not take all the precautions he should have done, but that his neglect was not wilful, whereupon the Chairman (Sir Montagu Sharpe, K.C.) said that on this finding the appeal would be allowed, but without costs. This somewhat puzzling result is possibly due to a compromise between the members of the Bench. If a valid enactment requires a butcher to take certain precautions, and if he is either actually or constructively aware of his obligation and fails to discharge it, the wilfulness or innocence of his motives would seem to be immaterial, unless the by-law or other enactment is so expressed as to give a defendant the benefit of good intentions.

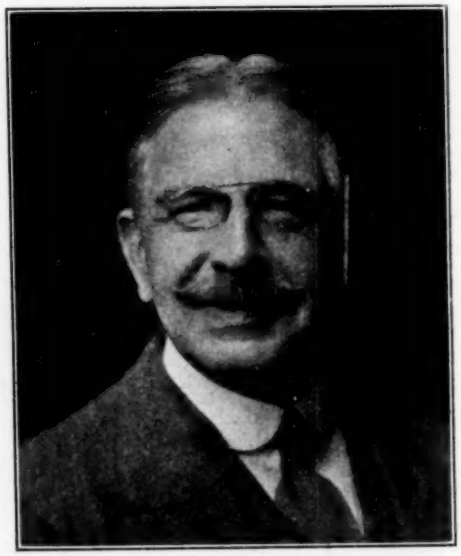
Wilfulness as an element in the commission of an offence presents well-known difficulties. Baron Bramwell, on a prosecution under a Local Act of 1774, governing the maintenance of the Aire and Calder navigation system, once held that "wilfully" throwing soil into a river meant wantonly or causelessly, and did not apply to a person acting in the course of his business and in the supposed assertion of a legal right. On the other hand, a surveyor was once held to have committed the offence of "wilfully obstructing" the highway by leaving large stones on a road under repair inadequately lighted at night. The stones were placed there purposely; it was culpable negligence not to warn the public of the danger; therefore the obstruction was wilful. In the case of the Acton butcher, the decision of the Court perhaps means that, though he did not protect his meat as he ought to have done, he honestly thought his own method of non-protection was the best method of preventing contamination by flies. If this is to be a good defence, it is a waste of time to undertake further prosecutions of this kind. Much depends, of course, upon the exact wording of the requirement which the butcher was charged with having failed to satisfy; but in the sphere of public health it is the facts, not the motives, which matter.

Obituary.

FRANCIS MITCHELL CAIRD, LL.D., M.B., F.R.C.S. EDIN.

Prof. Caird, of Edinburgh, who died on Nov. 1st, at the age of 73, was one of the early practitioners of antiseptic surgery. His powers as a teacher were valued highly by the University which he served, whilst the skill and knowledge he acquired brought him an international reputation.

Francis Mitchell Caird was educated at the Royal High School and at the University of Edinburgh. During his time as a student he acted as clinical dresser to Lord Lister, then Regius Professor of Clinical Surgery in the University, and learned directly from



PROF. F. M. CAIRD.

him the theory and methods which were changing surgical practice at that time. After graduating in 1877 Caird decided to take up surgery, and with this in view went on to the University of Strassburg, where he studied under Recklinghausen and Joessel, and laid the foundation of that detailed anatomical and pathological knowledge on which his work was always based. On his return to Edinburgh he continued his surgical studies, at the same time acting as demonstrator in Minto House and the Surgeons' Hall under Dr. Cossar Ewart, and became F.R.C.S. in 1880. After three years of anatomical work he was selected by Prof. Chiene as his assistant both in private work and in the teaching of large classes at the infirmary. In 1886 he was appointed assistant surgeon to the Royal Infirmary, and was made lecturer on surgery by the University and the Royal College of Surgeons of Edinburgh. During the next twenty years, in which the extra-mural school was at the height of its fame, Caird lectured regularly and with success. In 1900 he was appointed Surgeon to the Royal Infirmary in full charge of wards, and eight years later succeeded to the Regius Chair of Clinical Surgery. This he occupied until his retirement, but during the late war, although more than 60 years of age, he saw active service as consulting surgeon to the Expeditionary Force in France, where he took temporary rank as colonel.

Appreciation of Prof. Caird's services to surgery was frequently shown by academic honours. In 1901 he received the Victoria Liston Jubilee prize from the Royal College of Surgeons of Edinburgh for the greatest benefit done to practical surgery by any Fellow or Licentiate during the previous four years, and in 1912 he was elected President of the College. Of many Edinburgh societies, also, he was at one time or another president, including the Harveian Society and the Medico-Chirurgical Society, to whose proceedings he frequently contributed. In 1906 he was invited to deliver the annual address on Surgery to the Canadian Medical Association at Halifax. On his retirement in 1919 the University of Edinburgh made him LL.D.

As a surgeon Caird was notable for sound technique and painstaking carefulness. He was among the first who dared to perform abdominal operations and, later, to excise the tongue under local anæsthesia and the rectum under spinal anæsthesia. His kindness to his patients was proverbial, and he never spared himself where their welfare was concerned. His ability as a teacher, as has been mentioned, was considerable, and he was exceptionally skilful at illustrating his subject on the blackboard by means of drawings. The same talent for exposition is shown in the "Surgical Handbook" which he wrote in collaboration with Mr. C. W. Cathcart and in his other books and contributions to Edinburgh journals. Always he tried to avoid the narrow outlook, and every year he went on tour to see the main surgical centres on the Continent. Thus he came into touch with many foreign surgeons, among them counting as a personal friend Prof. Bier, of Berlin.

Caird's personality was charming. In spite of success he was a modest man, and to those needing his help he gave himself unsparingly. Before operation he inspired his patients with confidence, and afterwards gave them unceasing care, often visiting his wards in the small hours when he thought that this would increase their comfort. He was particularly interested in flowers, and was at one time President of the Botanical Society; after his retirement his chief hobby was gardening. Drawing and painting came easily to him; he was fond of music, and an omnivorous reader. In the City and University where he worked he will long be remembered for his personal, as well as his scientific attainments.

Prof. Caird leaves a widow, two daughters, and three sons, two of whom are members of the medical profession.

JAMES ERNEST LANE, F.R.C.S. ENG.,

CONSULTING SURGEON TO ST. MARY'S HOSPITAL.

WE regret to announce the death of Mr. James Ernest Lane, which occurred on Nov. 4th at the Star and Garter Home at Richmond, where he passed the last stages of a protracted illness bravely borne, following a fractured thigh.

Ernest Lane, as he was always called, was born in 1857 at 1, Grosvenor-place, the son of James R. Lane, F.R.C.S., surgeon to St. Mary's Hospital and the Lock Hospital, and the great nephew of Samuel Armstrong Lane, head of the Grosvenor-place School of Anatomy (connected in the first instance with St. George's Hospital), and one of the founders of St. Mary's Hospital, whither the school was transferred in 1854. Ernest Lane was educated at Lancing and Magdalen College School, and entered St. Mary's Hospital as a student in 1875, qualifying as M.R.C.S. in 1880, in which year he became resident medical officer of the hospital. He obtained the F.R.C.S. diploma in 1882, and was appointed demonstrator of anatomy in the medical school, holding the post until 1888, when he became lecturer on anatomy, a position which he filled during his protracted service as assistant surgeon. He became full surgeon to the hospital in 1904 and lecturer on surgery at the hospital, and was appointed consulting surgeon in 1922.

This long and close association with St. Mary's Hospital had its parallel in his connexion with the Lock Hospital, where he received his first appointment in 1878, and where for many years he filled various posts on the staff; he did notable work as surgeon in charge of the female V.D. department,

experience here being recognised by his appointment as a member of the Royal Commission on Venereal Diseases in 1913. The following extract from the minutes of the board of management dated Dec. 17th, 1925, testifies to the respect in which Lane was held by the institution:—

"That this Board, having heard the letter addressed to the Chairman from Mr. Ernest Lane resigning his position as honorary senior surgeon owing to his prolonged illness, resulting from his serious accident in November, 1923, accept the resignation with deep regret. The association of Mr. Lane's family with the hospitals dates back to 1846; his father and great-uncle having held the position of honorary surgeon before him, while Mr. Lane commenced his connexion in 1878, ultimately rising as they did to the highest post on the staff. The Board, in grateful remembrance of these long family records, desire in particular to place on their minutes an expression of their deep appreciation of the great services Mr. Lane has rendered."

Lane's connexion with the Royal College of Surgeons of England was also a long and close one. He was an examiner in elementary anatomy to the College as far back as 1891, became examiner in anatomy to the Conjoint Board in 1904, and in 1898 examiner in the same subject for the diploma of F.R.C.S. From 1907 to 1917 he was a member of the Court of Examiners of the College, he was for ten years a member of the Dental Board, and being elected to the Council in 1913 served until 1921 in that office. He also at different times acted as an examiner in surgery for commissions in the Royal Naval and Indian Medical Services.

In 1914, on the declaration of war, he first took charge as Major in the R.A.M.C.T. of the American Military Hospital at Paignton, and later was appointed to the 3rd London General Hospital, with which unit he worked until the end. Although not a prolific writer, Lane was the author of some sound articles on many aspects of venereal disease, among which may be mentioned various contributions to the Index of Treatment, and papers in THE LANCET on the general treatment of syphilis, and on the introduction of salvarsan contributed to the Transactions of the Royal Society of Medicine and to THE LANCET. He was also the editor of the 9th edition of "Heath's Practical Anatomy," and as President of the Harveian Society delivered a sound literary oration.

Lane's death deprives St. Mary's Hospital of the last direct link with its founders, and of a great representative of its work and traditions. His many posts on the staff have been enumerated; his assiduity in discharging them was exemplary, for it is on record that he lectured at 9 A.M. for four days a week during the winter sessions of 17 years and never once was late. To generations of men at St. Mary's Lane's lectures were the introduction to their work, and in their sports his figure was an equally intimate one. As a student he had been a keen athlete, a member of the football team, a winner of many events in the hospital sports, and the winner of the United Hospitals hurdles. He was president of the Hospital Students' Club, and when he presided over the annual dinner of the old students in 1910 his popularity was exemplified by an enthusiastic reception. And Lane's collengues on the staff held him in similar esteem. He commanded respect by his absolutely straight and well-balanced attitude in matters affecting the welfare and conduct of the institution, while he was unfailingly generous and unselfish in dealing with his juniors. Many of these have had much to thank him for in the readiness with which he allowed them full opportunities for work in the beds under his charge. He was a prominent Freemason, and was one of those chiefly instrumental in founding the Sancta Maria Lodge in connexion with the hospital; for nearly 25 years he was secretary, and to him, in greatest part, the outstanding success of the Lodge is due.

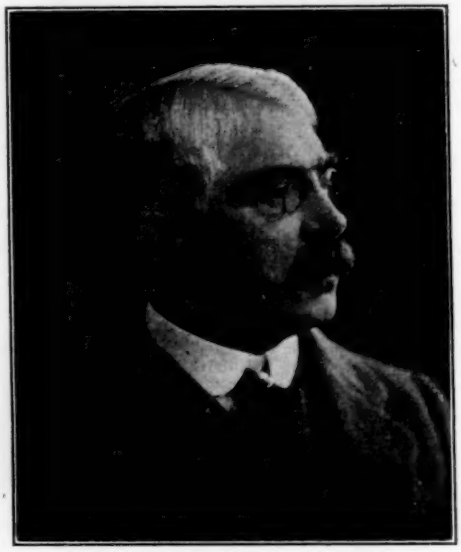
Not long after his retirement from active work at St. Mary's he sustained a serious accident, being knocked down by an omnibus in Regent-street. This left him bed-ridden, and for three years he endured his discomforts and disabilities with unfailing patience until he passed away peacefully at the Home for Disabled Officers, where he was cared for by one of his former pupils. The funeral took place at the Old Fulham Cemetery on Nov. 8th, and was attended by many of his former colleagues, his old pupils, and other personal friends.

In 1900 he married Miss Gertrude P. Woram, but leaves no family. Our deep sympathy is extended to his widow.

WILLIAM EDWARD FOTHERGILL, M.D., B.Sc. EDIN.

Prof. Fothergill has for many years been one of the most striking figures in Manchester medicine, and his sudden death at the Glasgow University dinner at Manchester on Nov. 4th will be greatly and widely regretted.

He was descended from a brother of Dr. John Fothergill, the eminent physician and botanist of the eighteenth century, and could boast that there has been a doctor in the family in each of the last six generations. He was properly proud of his Yorkshire descent, of the old family farm, Carr End, on Semmer Water off the Wensleydale Valley, and of the Quaker stock from which he arose. He was himself the son of Samuel and Emma Fothergill, of Darlington, County Durham, and was born in 1865. Entering the University of Edinburgh at the age of 17, he took degrees in Arts and Science before beginning the study of medicine. His undergraduate and early career was exceptionally brilliant in academic distinction; in practically all his examinations he obtained first-class honours; he won the Milner Fothergill Gold Medal in 1897, and he took many other prizes and medals. In 1895 he settled down to gynæcological practice in Manchester. It was not easy to make way at first among so many competitors, but success came without great delay. He secured honorary gynæcological appointments first at the Northern Hospital (1899), later at the Southern Hospital (1904), and, on the amalgamation with this, on the St. Mary's Hospitals of Manchester in 1905. In 1908 he was appointed assistant gynæcological surgeon to the Manchester Royal Infirmary, and in 1919, on the retirement of Prof. Archibald Donald, went on to the senior post. At the University in Manchester he became lecturer in 1901,



[*Lafayette.*

PROF. W. E. FOTHERGILL.

professor of obstetrics and gynæcology in 1920, and professor of clinical obstetrics and gynæcology in 1925. An interesting break in his purely gynæcological studies was afforded by his work as Director of the Clinical Laboratory at the Manchester Royal Infirmary from 1899 to 1905. The laboratory was then a new institution, and Fothergill was invited to take the post, as it was felt that his energy could make it a success where others might fail. Whilst holding this post he introduced radiological work to Manchester.

An enthusiastic teacher, with pithy, forceful sayings, he had strong views as to how gynæcology should be taught. Throughout all his teaching he pressed for a pathological or scientific classification of the subject as opposed to the haphazard description of diseases used in many text-books. This would save, he said, much space because it would remove the temptation to describe, as diseases, conditions which had no separate clinical existence; and something would be gained, also, by using a system with which students had become familiar from the beginning of their pathological work. These views he set out in the *Journal of Obstetrics and Gynæcology of the British Empire* of March, 1912, and all his books bear evidence of his orderly mind. He was a voluminous writer, and must have produced about a hundred papers in various journals, apart from larger works, which ran into many editions. While a successful operator in all fields of gynæcology, his especial interest lay in the development of the operation of colporrhaphy, which is associated with St. Mary's Hospitals (Manchester), and in which he took a leading part. Many surgeons from all parts of the world came to see his technique in this operation.

Fothergill was a good friend, an outspoken, fearless critic of people and institutions. The severity of his criticism occasionally made him a difficult opponent of those who did not agree with his views. He was a brilliant raconteur, and was much sought after as a dinner speaker. His obituary notice of Lloyd Roberts in THE LANCET (1920, ii., 766) is a pleasing example of humour, portraiture, and good taste. He showed great interest in all the students did at the University, both at work and play, and was a regular attendant at the University Athletic Ground. Perhaps his happiest moments were when, after some University function or after a dinner, he collected a party of young students at his house, and round the fire told his tales and discussed the medical topics of the hour. On the day before he died he had cheerfully looked forward to continuing his hospital work for years to come.

Prof. Fothergill married in 1895 Edith, daughter of the late J. Dillon Woon, of Chelsea. She died some years ago.

MARY AELFREDA ST. CLAIR SWANN, M.B. LOND.

WE have already recorded the death, on Oct. 25th, of Dr. Mary Swann at the early age of 27. On leaving Cheltenham School in 1918 Miss Swann entered the medical school of the Royal Free Hospital. As a student she always appeared keenly interested in her work and anxious to make the most of her opportunities. At the same time she had many interests in the outside world, and knew an exceptionally large number of people. After graduating M.B. Lond. in 1924 she became a clinical assistant at the Royal Free Hospital and would have gone on to a house appointment but for a breakdown in health, which cut short her work over a year ago. A medical friend describes her as a physician of great promise whose loss "is mourned by a wide circle both of students and staff amongst whom she had many friends and was held in high esteem both for her intellectual and for her personal gifts. She was a physician who exercised the full force of her personality in her handling of patients and had the rare possession of a discriminating and tempered sympathy added to a sound basis of medical knowledge which augured well for her success. Had she been spared she would worthily and with distinction have upheld the traditions of her hospital."

Miss Swann was the sister of Dr. M. B. R. Swann, Fellow of Caius College, Cambridge, who died early this year.

FRANCIS WARNER, M.D., F.R.C.P. LOND., F.R.C.S. ENG.,

CONSULTING PHYSICIAN TO THE LONDON HOSPITAL.

Francis Warner, whose death has been recently chronicled, must be regretted by all, for he was a pioneer in branches of medicine with which his name will always be associated. He was the son of James Neatby Warner, and was born in 1847. As a boy he was educated at home, but at the age of 20 he won a junior scholarship at King's College, London, and embarked on a successful career as an undergraduate. Qualifying in 1870, he became house physician at King's College Hospital, and when, some four years later, after taking the M.D. Lond. and F.R.C.S. Eng., he was appointed to a children's hospital, his attention was soon turned towards that study of mental and nervous conditions which afterwards chiefly interested him. Noticing the frequency of headaches, insomnia, and defects in adaptation to school life, he began to build up a system of routine examination to serve as a guide to accurate prognosis and treatment. At that time medical literature did not give detailed descriptions of the signs of mental disease such as were available in the examination of pulmonary or cardiac conditions, and Dr. Warner set himself to supply the need for them. His investigations were made easier by appointment in 1876 as medical registrar to the London Hospital, and later as assistant physician to the East London Hospital for Children, to both of which institutions he eventually became physician. In 1883 his unusual knowledge was recognised by his election to the Fellowship of the Royal College of Physicians, a body which he later served as examiner, acting in the same capacity at several of the Universities.

The guiding principle of Dr. Warner's research was that the state and functions of the brain could be interpreted by the muscular movements to which they gave rise. In 1888 he read a paper before the Royal Society in which he discussed the significance of the spontaneous movements of infants at birth and up to the period of mental display, and showed their analogy to cell action in lower organisms. This was pioneer work in mental physiology, and Dr. Warner's hypothesis of a physical or neural response to mental action has been valuable in developing the diagnosis and treatment of mental disorders and deficiency. An immense amount of labour was devoted to the measurement and graphic record of expressive movements, and apparatus was devised for the analysis of their components. A Hunterian lecture to the Royal College of Surgeons in 1887 contains some account of his views on the action of nerve centres. His work, however, was practical as well as academic, and he was especially interested in the effects of environment on mental processes, and in the hereditary capabilities and limitations of children from the eugenic standpoint. Painstaking observations led him to enumerate 63 signs of defect in bodily development, and these he took as a basis for classifying children. In 1888, with the assistance of the British Medical Association and other bodies, he began a seven years' investigation into the physical and mental condition of 100,000 school-children in London. Dr. Warner examined these children individually, recording in each case any of the 63 signs which he had set himself to look for. A report on 50,000 of them was published in 1890 by the United States Government, and a full report was later published by the British Medical Association with recommendations on education and training, some of which, dealing with defective children, have since been carried out. From this time Dr. Warner was naturally recognised as an authority on the development and mental physiology of the child, and was frequently called upon to give evidence before

departmental committees and Royal Commissions, including the one which, in 1889, inquired into the condition of blind, deaf, and defective children and led to the School Board for London being empowered to provide special schools. His opinions were also frequently in request by the Local Government Board, the Home Office, and the Education Department. Numerous addresses and lectures, including the Milroy lectures of 1892, were delivered before medical, educational, and other bodies, and a number of books, including the "Study of Children" and the "Nervous System of the Child," added to his considerable influence on current teaching and his recognition as an able investigator.

In 1913 Dr. Warner resigned from the staff of the London Hospital and became consulting physician. In the following year, however, he gave a course of lectures at the hospital on neuroses and psychoses, and during the late war he generously offered his services to the hospital, and actually remained in residence there for three and a half years, working daily. In 1921 his national services were recognised by the grant of a pension on the Civil List.

Dr. Warner married in 1880 Louisa Loder, daughter of William Howard, of Hampstead. He leaves a daughter and a son, who is a member of the medical profession.

RICHARD NORRIS WOLFENDEN, M.D. CAMB., F.C.S., F.Z.S., F.L.S.

THE death is reported from his home at Grimsby, Ontario, of Dr. R. N. Wolfenden, to whom a debt is owed by laryngologists and zoologists alike. He was born at Bolton, Lancashire, in 1854, and after studying at Owens College and Christ's College, Cambridge, qualified in 1880 from the London Hospital, where he served on the house staff before becoming lecturer on physiology to Charing Cross Hospital Medical School, and obtaining an appointment at the Throat Hospital in Golden Square. At this time he did some work on the action of X rays on bacterial growth. His interest in laryngology was stimulated by association with Sir Morell Mackenzie, whom he accompanied to Berlin, and with whom he jointly founded the *Journal of Laryngology and Rhinology*. His own contributions included papers on neuroses of the throat and nasal passages, studies of laryngeal neoplasms, and of the control of respiration in singing. He took part in the German expedition to the Antarctic and the cruise of the *Silver Belle*, which led him to study the remarkable group of deep-sea crustacea known as copepods, on which he wrote a standard book. He joined the British Marine Biological Association, becoming a member of its governing body. His later work included studies of the plankton of the North Atlantic and of the nature and action of snake venom. Most of this work was done from Seaford, where he went to live after giving up appointments in London, which included that of consulting physician to the Pearl Assurance Company. A few years ago he retired to Canada.

THE LATE DR. R. H. LUCAS.—At the age of 81, Dr. Robert Harry Lucas has died at Bury St. Edmunds. He was the third son of Dr. Thomas Lucas, of Burwell, in Cambridgeshire, and qualified as M.R.C.S. Eng. in 1869. After a term as house surgeon at the Middlesex Hospital he was appointed resident medical officer and held this post until in 1879 he settled in Bury, where he soon developed a large practice. As surgeon to the West Suffolk Hospital for many years he had a large share in building up the surgical department of that institution, and it is recalled that in 1893 he was sent for to advise King Edward (then Prince of Wales), who was staying at Newmarket. Dr. Lucas retired from the hospital staff in 1909, being made consulting surgeon. He was attached for many years to the Loyal Suffolk Hussars (Yeomanry) as surgeon-captain, and during the late war worked at the Military Hospital of the Suffolk Regiment's Depôt. He was also a magistrate for the county. Until about six months ago he enjoyed good health. Dr. Lucas married in 1884 the daughter of Mr. Ambrose Smith, of Walford, who survives him with one son, Dr. H. A. Lucas, who is clinical pathologist to King's College Hospital.

Correspondence.

"Audi alteram partem."

EPIDEMIC ENCEPHALITIS IN DOGS.

To the Editor of THE LANCET.

SIR,—Mr. Pugh in his very valuable contribution in THE LANCET of Nov. 6th under the above title wishes to impale upon the horns of a dilemma the supporters of the conception of epidemic encephalitis as a specific and individual disease. In effect, he says that either the human and the canine diseases are identical—i.e., caused by the same virus—or else they are mere symptoms of some other infection—namely, influenza and distemper respectively.

In my view there is no such dilemma. There is another possibility—namely, predisposition of a sufferer from one infection to another. Many instances can be adduced; scarlet fever and diphtheria, malaria and dysentery, measles, whooping-cough, leprosy, possibly erythema nodosum, and tuberculosis. Influenza notoriously renders the sufferer susceptible to secondary invaders and, as Mr. Pugh states in his last paragraph, the *Bacillus bronchisepticus* is probably only a secondary invader in distemper.

On the other hand, there is the frequent occurrence of labial herpes in pneumonia and other respiratory infections. Believed to be a mere symptom, it is now recognised as a secondary infection due to a virus closely allied to that of encephalitis and capable of setting up encephalitis in the rabbit. Those who believe that influenza and human epidemic encephalitis are due to one and the same virus must produce epidemiological or bacteriological evidence in support of their view. My own experience, a field investigation of about 500 cases of epidemic encephalitis in Liverpool, is entirely against such a belief. It has shown:—

(*a*) That in seven years the outbreaks of influenza and encephalitis have never coincided; neither do they regularly alternate. The reference is to the dates of onset of encephalitis.

(*b*) That it is quite uncommon for a genuine attack of influenza, accompanied by symptoms affecting the lower respiratory tract, to precede the onset of encephalitis; where encephalitis has apparently followed an attack of supposed "influenza," this latter has in the majority of cases been admittedly the febrile onset of encephalitis.

(*c*) The entire absence of any case of epidemic encephalitis occurring in a family affected with an outbreak of influenza of the ordinary respiratory type.

(*d*) On the contrary, the occurrence of two or more cases of encephalitis of characteristic type in one family is a not infrequent event. I have seen three children affected quite typically—one developed characteristic sequelæ—the onset having been preceded by a relapse of the mother who had suffered a similar attack three years previously. Making allowance for the varied symptomatology of epidemic encephalitis it breeds true.

(*e*) On the other hand, during the climax of an influenzal wave, there is sometimes a small increase in the number of cases of epidemic encephalitis; this may be accounted for by influenza predisposing to encephalitis; the manner of this predisposition has been suggested by Yates[1]—namely, that morbid conditions of the nasal sinuses permit infection with the encephalitic virus.

There is one striking omission from Mr. Pugh's contribution. Did any cases of typical "bronchisepticus" character occur simultaneously and in close association with the cases of the epidemic which he describes? Or does he base his diagnosis of distemper on the accepted belief among veterinary practitioners that "the nervous aspect of distemper is merely one form of reaction among several to which the virus of distemper may give rise"? Has this belief received experimental verification? It would also be of interest to know whether there was evidence of case to case infection, and also the age incidence of the disease. The similarity of the symptoms of the canine epidemic at Sevenoaks to the human encephalitis is most marked. Whilst the viruses may be only allied and not identical this similarity does

[1] The Condition of the Accessory Sinuses in Encephalitis Lethargica, Proc. Roy. Soc. Med., xi., 10, 646 (October, 1925).

suggest the propriety of endeavouring to infect dogs with the human virus, if this has not been adequately tested.

I would add that I welcome Mr. Pugh's paper and consider that there is much to be gained from the joint discussion by veterinarians and medical men of allied problems in epidemiology.

I am, Sir, yours faithfully,
C. O. STALLYBRASS, M.D., D.P.H.

Liverpool, Nov. 6th, 1926.

PARAFFIN IN PLASTIC SURGERY OF THE NOSE.

To the Editor of THE LANCET.

SIR,—In your issue of March 27th you were good enough to review my book, "Plastic Surgery of the Nose," in terms very gratifying to an author pardonably interested in the reception of his first work. I trust you will not hold me in any way lacking in the appreciation due for this courtesy if I find myself in active disagreement with your reviewer concerning one of his expressions of individual opinion in which he traverses the position I took up in regard to the use of paraffin in naso-facial repair. My view is that the use of paraffin should be condemned. His view is that "the common small depression at the nasal bridge is best corrected by the injection of a small quantity of paraffin wax," and that "the result is quite permanent."

The question is: When may the result be pronounced "quite permanent"? Practically all cases demanding surgical interference to get rid of the injurious effects of injected paraffin had gone for several years before there was occasion to doubt the permanence of the repair, and most of them for several years more before the condition became so menacing that it was no longer possible to defer consultation for relief. That is the characteristic of injected paraffin; there may be "permanence" for ten years and then paraffinoma in the eleventh or twelfth.

The injuries produced are peculiar to the material. The tissues are intolerant of any foreign body inserted among them, and there is persistent effort directed towards its expulsion. With most of them the expulsion is early and violent. With paraffin it is slower, but not less certain. There is a tendency for the particles to disseminate even without pressure, this being due to the nature of the substance; but where, as in the case mentioned, the material is employed to give a support, pressure is inevitable, and the process of dissemination, with its sequence of infiltration and inflammation, is hastened. When it is known beyond peradventure that these things do happen, how can anyone possibly proceed upon the assumption that in a given instance they will not?

For those who believed, and those who still believe, in the efficacy of paraffin, the nose has always been a favourite field. That is why the majority of cases calling for relief are nose cases. Anyone who sees a few of them will want no more to do with paraffin for any correction. It may be encapsulated and tumescent, or it may travel into the tissues of the cheek, lip, philtrum, ala, tip or columella, and wherever it is or has been there are tumours, varying in kind and degree. The only recourse is complete extirpation, something not always possible. It does happen that there is hardly enough healthy tissue left upon which to base a repair. This, surely, is a sufficient deterrent against its use, without going into the case-histories of a more startling nature, with their record of blindness, of embolism, and of malignancy. Nor is there much consolation from reflecting that in many cases the material was injected in the belief that the repair was the best and would be permanent.

Moreover, in the case cited, there is no need to resort to the use of paraffin, for if correction cannot be effected by a readjustment of the tissues themselves, it can be nicely and easily done by transferring a small bit of ear cartilage.

I am, Sir, yours faithfully,
J. EASTMAN-SHEEHAN.

New York, Oct. 28th, 1926.

ASHAMED TO BEG.

To the Editor of THE LANCET.

SIR,—I also have had occasion to see consultants on my own behalf and that of members of my family and have had the same difficulties. Consultants—and they have unfortunately been many—have one and all been indefatigable in their kindness and generous of their skill but, though I am engaged wholly in laboratory work and almost divorced from patients, they all refuse fees. I recently asked a medical colleague to tell me what he would regard as a reasonable fee for one in my financial position for what he had done for me, and allow me to send a cheque to either Epsom College or the Royal Medical Benevolent Fund. We both welcomed it as a happy way out.

I am, Sir, yours faithfully,
MEDICO II.

Nov. 8th, 1926.

To the Editor of THE LANCET.

SIR,—Your correspondent who describes himself in the issue of Nov. 6th as "ashamed to beg," has created for himself an entirely imaginary difficulty. He need not, as he puts it, "hesitate" to ask the help of any colleague, consultant, specialist or other. One is only proud that one's services or advice are sought, and happy that one can place them at the disposal of a colleague. His fear that a present will not be valued, or that the consultant will not be pleased, is morbid, and he should recognise it as such. At least a third of the men on the Register are in the same position, unable to send private cases to consultants. If the matter of a fee is really felt, a plan I have found acceptable might help. In such cases, where a fee is pressed, I ask the patient to become a subscriber to the Royal Medical Benevolent Fund, or to increase his subscription if he is one already. This avoids any question of indebtedness; I have accepted the fee, but on behalf of other and even less fortunate colleagues, and in the knowledge that the debt the patient feels he owes to his professional brethren he is paying to his professional brethren.

I am, Sir, yours faithfully,
CH.M.

Nov. 8th, 1926.

To the Editor of THE LANCET.

SIR,—In reply to Medico's letter "Ashamed to Beg," our friend overlooks the broader and truer aspect.

All "consultants and specialists" have had help given them in their hours of need by their colleagues. As they are unable to repay the aid individually, they welcome the opportunity of helping the profession in general. This assistance is their only means of expressing their deep sense of gratitude.

I am, Sir, yours faithfully,
G. LENTHAL CHEATLE.

Harley-street, W., Nov. 9th, 1926.

HALOGEN ERUPTIONS WITH LESIONS ON THE TONGUE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Nov. 6th (p. 952) Prof. A. J. Hall records the case of a nephritic young woman, who, as a result of taking potassium iodide (only 12 gr. in all) developed a severe iodide eruption, one of the lesions being situated on the tongue. About three weeks later she developed pericarditis and died. He writes: "This occurrence of a lesion on the tongue, similar to those on the face, has, so far as I am aware, not been previously observed." In my paper on the Mycotic Type of Bromodermia and Iododermia in the *British Journal of Dermatology and Syphilis* (1923, xxxv., 169–180) Case 5 was that of a girl, aged 14 years, with granulomatous nodules on the tongue as well as lesions on the face and one leg, apparently due to iodides that she had been taking. In the hospital there was bronchitis, with evidence of nephritis, and pyrexia. She died and the necropsy showed (not very old) pericardial adhesion, much bronchitis, and "large white kidneys." She had

formerly had scarlet fever. The appearance of the tongue and face is illustrated by Fig. 4 of my paper. I knew of œdema of the tongue and glottis due to iodides, but not of any other case of iododermia in which the tongue showed lesions similar to those on the skin. After publishing the paper, however, I received a kind letter from a doctor including notes of a case of iododermia, with involvement of the tongue; the patient died with glottis œdema and broncho-pneumonia, but no mention of nephritis was made. Another doctor told me he had seen "variola-like" iodide eruptions in nephritic cases, including one case in which the tongue was involved. A third doctor wrote to me of a case of chronic nephritis in which a dose of potassium iodide was given to test the renal function. This was followed by the appearance of a granulomatous eruption on the face, tongue, hands, and other parts, with acute œdema of the eyelids and pyrexia. Pneumonic consolidation of the lungs and death followed. A fourth doctor told me of a man aged about 40 years, who was treated for rheumatoid troubles with moderate doses of potassium iodide. He developed a severe iodide eruption, together with ulcers on the tongue, and died with glottis œdema. That patient was not known to have renal disease. On the whole it seems to me most probable that renal disease, when present, has played an important rôle in such cases. In the two cases in which renal disease was not found or not mentioned, no post-mortem examination was, I believe, made.

A point in regard to the "mycotic" or "granulomatous" type of halogen eruptions—not alluded to by Prof. Hall or Dr. H. C. Semon (THE LANCET, Oct. 16th, p. 803)—is that in some cases (mostly before the days of the Wassermann reaction) the eruption has been regarded as possibly syphilitic and suitable for further iodide treatment.

I am, Sir, yours faithfully,

London, W., Nov. 8th, 1926. F. PARKES WEBER.

THE TREATMENT OF FLOUR.

To the Editor of THE LANCET.

SIR,—Various medical readers of THE LANCET have called my attention to the annotation on p. 718 of your issue of Oct. 2nd entitled the Adulteration of Food, which consists essentially of portions of a report by Mr. G. D. Elsdon, borough analyst to the Salford Health Committee. In the matter of flour, I do not accept the accuracy of the allegations contained therein, and it has been urged on me as a public duty that I should state plainly where in my view they are incorrect. I am somewhat in difficulty because the Government has referred the whole of the subject to a Departmental Committee which has investigated it most thoroughly. The manufacturers of substances used for flour treatment have laid their case in full before the Committee, so in fact have the millers, and evidence has also been given by bakers.

This Committee has not yet issued its report, and, consequently, the matter is still sub judice. In these circumstances I am precluded from dealing with Mr. Elsdon's statements in detail. I may, however, be permitted to say that Mr. Elsdon's suggestion, that in no other civilised country but England is flour treatment permitted, is not in accordance with facts. It is within the writer's personal knowledge that in Europe such flour treatment is successfully carried out in Germany, Holland, and several other countries. In America the same is done in the Argentine and the United States.

Although financially interested in certain processes of flour treatment, I venture to assure you that taking, for example, the form of such treatment which Mr. Elsdon apparently most reprobates—viz., that with persulphates—the fact is that it does not result in any detriment to the public, and that as a consequence the people are supplied with a pure loaf of better flavour and greater digestibility and consequently higher nutritive value.

I am, Sir, yours faithfully,

Hove, Sussex, Nov. 9th, 1926. WILLIAM JAGO.

*** The Minister of Health stated in Parliament on Nov. 9th that a Committee, alluded to by our correspondent, has had the various questions referred to it. The report of this Committee has been long expected.—ED. L.

THE SUPPLEMENTAL CHARTER OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

WE have received several letters accusing the Council of the College of dilatory methods in that effect has not been given to the supplemental charter in time to provide for the altered status of women Fellows and Members. The matter has been referred to in the lay press, strong terms being employed, showing unfamiliarity with the facts.

The supplemental charter of the Royal College of Surgeons of England was approved by the King in Council on July 26th, but was not officially sealed till August 19th, 1926, and was received by the College on August 24th. Arrangements to carry out the provisions of charters have to be made by by-laws and regulations, and it is not possible to formulate these immediately on the grant of a charter. In this case alterations have to be made in five by-laws, and the exact terms have to be settled by counsel.

No by-law of the College can be made, altered, or abrogated without the sanction of the Crown, or has any validity until approved by the Crown. Section III. of the by-laws defines the process of making, altering, or abrogating a by-law and requires that at least three meetings of the Council must be held for such a purpose. When the by-law has been finally approved and adopted by the Council, it has to be submitted to the Home Secretary for sanction, and before the Home Secretary sanctions the by-law it has to be examined and allowed by the Lord Chancellor and the Lord Chief Justice. Every by-law of the College bears the signatures of these three principal officers of the State. All this takes time, and the process of making a new by-law is seldom accomplished in much under six months.

The charter of 1926 does not in itself give women Fellows and Members the same status as men, but it makes it lawful for the College to give them the same status. Section XXVI. of the by-laws provides that in some particulars women Fellows and Members do not have the same rights and privileges as men, and that by-law must be altered before the College can exercise the power given it under the new charter of giving women Fellows and Members the same status as men holding the like diploma.

All this elaborate official procedure may seem cumbersome or unnecessary, but changes in the laws of the land must be made with every care or the consequences lead to troubles out of comparison greater than those which follow a delay, however much resented. There is no reason to doubt that steps are being taken by the College to effect the alteration of the by-law as quickly as possible.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—The following scholarships for 1926–27 have been awarded: Entrance Science Scholars: A. G. Sanders (£150), A. Kahan (£60); Entrance Arts Scholars: L. W. Lauste, A. Kennedy; Entrance University Scholar: G. W. Pickering (£100).

FINANCES OF ST. GEORGE'S HOSPITAL.—The ordinary income of this hospital is nearly £25,000 less than the ordinary expenditure, and there is now an overdraft of that amount. The joint treasurers, Lord Greville and Lord Maidstone, appeal for help in view of the fact that this year the revenue from legacies has failed to make up the deficit.

BIOLOGICAL STANDARDISATION OF REMEDIES.

DISCUSSION AT THE SECTION OF THERAPEUTICS AND PHARMACOLOGY OF THE ROYAL SOCIETY OF MEDICINE.

AT a meeting of this Section held on Nov. 9th, with Dr. GEORGE GRAHAM, the President, in the chair, Dr. H. H. DALE opened a discussion on the Biological Standardisation of Remedies. He said that every remedy with a potent and definite action should be supplied for therapeutic use with its activity indicated in some clear and intelligible notation. Where the active constituent was determinable by chemical methods this was simple, but there was a large and growing class of important remedies to which chemical standards were not applicable. In many of them the activity could be measured by a biological method. Everybody agreed on the importance of biologic units for measuring diphtheria antitoxin, insulin, and pituitary extract, but there had been a tendency to doubt the need for and value of such testing in the case of drugs which had long been used empirically. To the experimental worker the inevitable variation of the reaction of different patients, so far from making accurate measurement of a drug's activity less important, made it the more urgently necessary. His second principle was that the word "standardisation" had no proper use except in relation to some generally accepted standard. This seemed obvious and yet no official standards of activity, biologically determined, had hitherto been available in this country. They were, however, to come into force next year. Under these circumstances the manufacturers could not be blamed because preparations of widely different activities had been issued by different firms, but the natural result had been to strengthen conservative scepticism and bring the principle of biological standardisation into unjustifiable disrepute. The League of Nations had interested itself in the promotion of international uniformity, and already standards had been agreed upon for two sera, for insulin, for pituitary extract, and for salvarsan.

The Importance of Comparative Standardisation.

Dr. Dale urged the necessity for making the basis of all biological standards comparative. As a matter of practical experience it was not possible to define a unit for the activity of a remedy in absolute terms of some animal reaction. Ehrlich established the unit for diphtheria antitoxin in terms of a definite weight of an arbitrarily-chosen standard, and this method had stood the test of time. The first suggestion of measuring potent and variable drugs like digitalis by analogous methods had come from the late Prof. Cushny. Pharmacologists, however, for many years fell into error and ran a serious risk of discrediting their methods by tending to attribute too absolute a value to the determination of a limiting value such as a lethal dose. The drugs with which they dealt were different from the diphtheria antitoxin, where the aim of the test was to find the quantity of serum which left one lethal dose of toxin free and effective, so that an error even of 100 per cent. in the measurement of the free toxin involved comparatively little error in the determination of the neutralising quantity. Moreover, the animal used was merely the indicator in a titration, whereas for a "lethal dose" test the sensitiveness of the animal was a most important factor, and the measurement could not be accurately made on a small number of animals. The International Conference in Edinburgh in 1923 had decided to test the different methods recommended for standardising digitalis. The tests from many different countries showed complete agreement so long as the results were evaluated in comparison with a standard, but when an attempt was made to define the activity of any of the given specimens in absolute units of animal reaction the widest discrepancies appeared. In the early days of insulin attempts had been made to define a unit as the quantity needed to produce hypoglycæmic convulsions in a rabbit weighing 2 kg., but it soon became clear that this quantity varied enormously with different rabbits. Other laboratories tried to fix it by determining the dose needed to produce convulsions in a given proportion of mice, but found that small changes in diet and environment made large systematic differences in the reaction. Fortunately, the Edinburgh Conference had been able to intervene and fix a standard dry preparation.

The proper notation for the expression of the activity of a substance was one which employed an arbitrary but uniform and generally accepted unit of activity. Nobody would think of prescribing diphtheria antitoxin or insulin in drachms or cubic centimetres, but unfortunately dosage by volume of pituitary extract had grown up. There was no longer any excuse for the marketing of extracts varying, even theoretically, from 5 per cent. to 20 per cent. of the gland substance; a standard was now available.

The Nature of the Standard.

All the International Conferences had accepted the principle that a standard should consist of a specimen of the therapeutic substance itself, or of its essential active constituents, in a stable form. This was the only safe principle. The attempt to introduce such substances as histamine and potassium chloride as standards for pituitary extract had failed completely. The proper standard for digitalis was digitalis and a standard international sample of this drug had recently been completed by Prof. Magnus, of Utrecht.

It might seem strange to insist that the methods of biological comparison should be such as to give reasonably accurate measurement of the therapeutic activity, yet experience had shown that it was necessary to lay this down. The expression "biological standardisation" had been used for methods which could not be applied quantitatively to the measurement of anything, and without any evidence that the crude qualitative indications they gave had any relation to the therapeutic effect. The difficulty was to make clinical measurements of activity with any degree of precision, but it was not an insurmountable one, and there was room for much careful work.

Correspondence Between Laboratory and Clinical Tests.

It had been found that guarantee of freedom from undue toxicity was insufficient for neosalvarsan preparations as it was easy to produce products with a toxicity far below the official maximum, but with a therapeutic potency also lowered. A test for potency had, therefore, to be elaborated and the speaker and his co-workers had found that an estimation of the curative activity on mice infected with trypanosomiasis corresponded accurately with the estimation of efficacy in causing the disappearance of the spirochæte from superficial syphilitic lesions in man. Similar correspondence between laboratory and clinical tests had been found with digitalis and insulin. Laboratory workers must bear in mind the need for correlating their investigations with clinical work.

Dr. J. W. TREVAN dealt with the accuracy of certain well-established tests devised for all sorts of remedies which could not be standardised by chemical methods. Tests for insulin, digitalis, ergot, adrenalin, vitamins, and the ovarian hormone had reached such a stage that a definite value could be attributed to the degree of their accuracy. On the other hand, the methods described for testing parathyroid, thyroid, cannabis indica, and other substances were not supported by sufficient evidence for quantitative work. The errors which had to be considered were very largely due to the variability of the animals or organs used for the tests. He showed a chart illustrating, in a series of 250 frogs, the way in which they differed in the quantity of strophanthus required to stop the heart in systole in 12 hours. It took at least three times as much to kill some frogs as others. A similar chart showed the percentage of convulsions produced by different doses of insulin; here the variation was

even greater. The same difficulty arose with isolated organs.

Methods of Minimising the Error Due to Individual Variations.

The best and most accurate way of avoiding this difficulty was to use some reaction which was quickly reversible, so that the effect of the drug to be tested could be produced, washed out again, and repeated with a sample of some standard preparation. For instance, the rise of blood pressure in a cat bore a simple and constant relation to the dose of adrenalin injected, and the expected error could be worked out from the curve. In the middle of the curve it was found, both theoretically and practically, to be of the order of 6 per cent. The same sort of curve was obtained with pituitary extract, but here the sensitivity of the uterus did not remain constant throughout the experiment, so that the error was between 10 per cent. and 20 per cent. of the dose given. The method was also applicable to the artificial œstrus produced in castrated female rats by ovarian hormone, but the difficulty here was that a large increase in dose was necessary to produce a distinguishable increase in the œstrus. Recently it had been found that digitalis could also be tested in this way by its action on the rabbit's auricle in Ringer solution of a hydrogen-ion concentration of 7·4 obtained with boric acid mixture. An excessive dose produced a toxic effect which greatly increased the difficulty of washing out. Not all drugs, however, could be tested by a reversible reaction, and for some of these Clark's method for ergot was useful. Here two strips of uterine muscle were removed, as close together as possible, and tested in separate baths at the same time. A third way was to increase the number of tests, as, for instance, had been done with the action of digitalis on frogs and cats and of insulin on mice, and to some extent on rabbits. In the speaker's opinion the term "minimal lethal dose" had no fixed meaning and should be dropped in favour of the "average convulsive—or lethal—dose"—i.e., that obtained at about the middle of the range. Unfortunately, this varied from time to time, and might be twice as much on one day as on another, as animals showed periodic variations in sensitivity. Therefore, until a worker had demonstrated satisfactorily, through a very large series of experiments, that any given lethal dose method did not suffer from this "shift" in the average lethal dose, he must always assume that it might do so, and whenever he tested an unknown substance he must at the same time inject an equal number of animals with a standard preparation for comparison. This meant many experiments and many animals. It had appeared that certain antimonial preparations did not suffer from "shift," and possibly salvarsan was also free. The method of determining the error in a lethal dose experiment was complicated, but the expected and calculated errors had been found to correspond very well. If there were a 10 per cent. error it meant that 800 mice had to be injected, or, if digitalis were being tested on frogs, a 20 per cent. error meant the use of 80 animals.

Another method, which avoided this difficulty, was Hatcher's cat method for digitalis, wherein the drug was injected into a vein until the heart just stopped, and the dose was then calculated. The method of estimating the blood-sugar of a rabbit when testing insulin had the advantage that the rabbit could be used again a week later, but the sensitivity of rabbits varied from week to week. The number of animals necessary for the different tests in order to get an error of less than 25 per cent. was as follows: Adrenalin test, 1; pituitary test, 1; Clark's method for ergot, 1; auricle method for digitalis, 1; Hatcher method, 5; left ventricle of frog, 10; lymph sac of frog, 80; insulin in rabbits, 6; insulin in mice, 200. 80 frogs or 200 mice proved, however, only slightly more expensive than the smaller number of cats or rabbits, as the latter required careful watching all the time by skilled assistants.

The Value of the Laboratory Method to the Clinician.

Dr. J. H. BURN showed charts illustrating the relation between laboratory and clinical methods, saying that he doubted if practising physicians fully realised that the pharmacologist was not content merely to devise a method which measured something, but was actually measuring just what the clinician needed. Insulin had been tested by Marks's method on rabbits and on patients, and he showed the figures of the salvarsan preparations mentioned by Dr. Dale. The figures showed remarkable agreement in all cases. He also showed some unpublished figures from the Baltimore clinic in which different preparations of digitalis had been tested by clinicians and by the cat method, and suggested that the American investigators had succeeded in confirming laboratory investigations because they gave one single large dose instead of the small repeated administration more usual in this country.

The PRESIDENT observed that most clinicians had no idea how much work was done in order to make the preparations they used safe for them. Whatever drug was given certain people were going to have a violent idiosyncratic reaction and this could not be calculated. He hoped that this recent standardisation work would be incorporated in the new Pharmacopœia.

Dr. TREVAN and Dr. DALE, in reply, emphasised the necessity for setting up a standard for such substances as cod-liver oil, so that all workers could compare their preparations with one thing. The difficulty of vitamin standardisation did not seem to be properly realised.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Board held from Oct. 5th to 26th, the following candidates were approved in the subjects indicated, but are not yet eligible for diplomas:—

Medicine.—F. Augsburger, Lausanne; G. H. Barendt Cambridge and St. Bart.'s; Winifred P. Brinckman, Bristol; C. P. Campion, Univ. Coll.; H. H. Cohen, London; E. Colin-Russ, Middlesex; C. L. Cope, Oxford and Univ. Coll.; C. Davies, Birmingham; Helen L. Dunn, Charing Cross; Evelyn Durrance, Royal Free; R. W. Eldridge, Liverpool; F. W. Gayford, Middlesex; Vivienne M. Gunson and V. F. Hall, King's Coll.; E. M. V. Hensman, Middlesex; R. C. Hodges, Westminster; V. Kathirgamatamby, London; M. S. Katre, Madras; F. Kellett, Cambridge and St. George's; S. M. Kharegat, St. Bart.'s; F. E. Loewy, Middlesex; E. M. Lourie, Univ. Coll.; W. S. Maclay, St. Bart.'s; J. K. Monro, London; Millicent Moseley, Birmingham; M. G. Nimatallah, London; Mary O'Leary, St. Mary's; R. K. Pillay, London; Aileen M. S. Pollock, St. Mary's; J. S. Rake, Guy's; Marion Ravell, Royal Free; S. Shalaby, London; R. Stanton, Westminster; W. H. Tandy, Birmingham; J. R. H. Towers, Leeds; C. G. Townsend, Cambridge and Guy's; Isabel Vallance, St. Mary's; W. D. Williams, London; Elsie B. Wright, Royal Free; and H. D. Zscherpel, St. Bart.'s.

Surgery.—H. Allan, Middlesex; Sophia A. P. Allen, Charing Cross; Gertrude Alphonso, Royal Free; R. G. Apthorpe, St. Thomas's; F. Augsburger, Lausanne and Lisbon; T. G. Benjamin, Guy's; H. Berliner, Univ. Coll.; K. J. Box, St. Thomas's; Winifred P. Brinckman, Bristol; A. H. Bruce, Guy's; R. Bruce, Leeds; R. W. Butler, St. Thomas's; R. L. Cheverton, Birmingham; Pamela M. G. Churchill, King's Coll.; E. T. Clifton, Guy's; W. A. Clark, St. Bart.'s; C. L. Cope, Univ. Coll.; N. Cox, Manchester; A. R. Culley, Cardiff; P. M. Davidson, London; T. G. Davies, L. F. Day, and J. Dean, St. Bart.'s; A. O. Dreosti, St. George's; J. Ellison, Leeds; A. G. Ensor, Guy's; D. K. Evans, Cardiff; Enid C. Evans, Westminster; K. M. Foster, Birmingham; H. S. Gaussen, Guy's; J. C. Gent, St. Mary's; N. Gindi, Birmingham; L. C. Griffin, St. Thomas's; T. R. Griffiths and J. H. Gubbin, St. Bart.'s; V. C. J. Harris, Manchester; J. A. Hartley, St. Thomas's; R. A. Haythornthwaite, Westminster; H. E. Houfton, St. Bart.'s; S. G. Irlam, London; N. Iskander, Birmingham; M. I. Jackson, Cardiff; D. N. R. Jones, St. Mary's; W. B. R. Jones, St. Thomas's; C. E. Kellett, Univ. Coll.; R. A. King, St. Mary's; G. Lee, St. Thomas's; P. G. Levick, St. Bart.'s; I. N. Lewis, St. George's; J. T. Lewis, Cardiff; A. J. Lomax, Manchester; E. M. Lourie, Univ. Coll.; Annie M. McGrath, Westminster; R. W. L. May, St. Thomas's; R. L. Midgley and H. M. Mikhail, Univ. Coll.; Margaret Mitchell, Birmingham; J. K. Monro, London; P. H. L. Moore, Sydney and St. George's; W. C. W. Nixon and Margaret B. Norman, St. Mary's; D. E. Oakley, St. Bart.'s; E. N. O'Neill, St. Mary's; Muriel V. Paton, Royal Free; G. E. B. Payne, Univ. Coll.; G. C. Pether,

Middlesex; R. S. Pilcher, Univ. Coll.; M. W. Platel, St. Bart.'s; W. P. Purvis, St. Thomas's; L. J. Rae, London; L. W. Rose and W. Rosenberg, Guy's; R. Rutherford, King's Coll.; C. G. A. Sadler, St. Mary's; S. W. Savage, Univ. Coll.; S. Segal, Westminster; L. A. P. Slinger, St. Bart.'s; H. M. S. Stanley, Cardiff; J. F. Stent, St. Thomas's; C. B. V. Tait, St. Bart.'s; H. D. Tonking, St. Thomas's; R. H. Tootill, Manchester; L. P. Tupling, Guy's; S. Tyagaraja, St. Thomas's; G. N. Unnithan, Univ. Coll.; E. S. Vergette, St. Bart.'s; J. Wasserstein, London; L. A. F. Wiles, St. Thomas's; H. M. Willoughby, St. Bart.'s; C. G. Windsor, St. Thomas's; and C. E. Woodrow, St. Bart.'s

Midwifery.—V. H. Addison, St. Bart.'s; N. H. Allen, Guy's; B. J. E. Anson, King's Coll.; Cecile H. D. Asher, Royal Free; N. Attygalle, Ceylon and Middlesex; A. Batty, Middlesex; H. Berliner, Univ. Coll.; Joan H. Blackledge, Royal Free; A. J. Blumenthal, Univ. Coll.; Eleanor D. Blunt, Royal Free; R. V. Bowles, Univ. Coll.; W. J. Branday, Birmingham; I. G. Briggs, London; Muriel Brighton and Helen R. B. Buck, Royal Free; H. J. Burrows, St. Bart.'s; E. Burton and W. A. Busby, London; R. W. Butler, St. Thomas's; Mildred Carpenter, Univ. Coll.; D. C. Carroll, London; C. H. A. Carty-Salmon, St. Bart.'s; M. Cohen, Middlesex; Mary C. E. Constantine, Royal Free; P. J. Cowin and W. V. Cruden, St. Bart.'s; Constance M. Cusden, Charing Cross; J. G. A. Davel, London; C. S. Davies, St. Bart.'s; W. N. Dickensen, St. Thomas's; C. W. L. Dodd, London; A. O. Dreosti, St. George's; Margaret R. Dunlop, Royal Free; H. G. Edmunds, Univ. Coll.; E. E. Elzawahry, Manchester; Geraldine W. Everett, Royal Free; F. M. M. Eyton-Jones, St. Bart.'s; Margaret C. Falconar, Royal Free and St. Mary's; R. V. Farr and K. M. Foster, Birmingham; J. P. M. Fraulo, Guy's; V. Freeman, Univ. Coll.; Mabel Cassells Freeston, Royal Free; K. T. Gajjar, Univ. Coll.; C. E. Gallagher, Guy's; J. H. P. Games, Univ. Coll.; R. J. S. Garrow, Leeds; B. H. Gibson, St. Bart.'s; R. D'A. Gifford, Birmingham; F. H. Gillett, St. Thomas's; J. L. Glover, Guy's; J. H. Gubbin, St. Bart.'s; Bridget S. P. Gurney, Royal Free; H. Hannesson, London; V. C. J. Harris, Manchester; W. R. E. Harrison, St. Bart.'s; Lilian M. J. Henry, King's Coll.; Laurel K. Heny, Royal Free; W. A. C. Hortor, Middlesex; H. E. Houfton, St. Bart.'s; P. Inwald, Middlesex; A. H. Jackson, Royal Free; Amy L. Jagger and T. E. James, Cardiff; D. N. Rocyn Jones, St. Mary's; W. P. Jones, Univ. Coll.; Lily A. Jörgensen, Royal Free; C. S. Kah, St. Thomas's; R. A. King, St. Mary's; Caroline M. Kingsmill, Royal Free and St. Mary's; H. J. Krichefski, Univ. Coll.; P. G. Levick, St. Bart.'s; O. I. Lewis, London; E. W. Lindeck, Univ. Coll.; Olive H. Lister, King's Coll.; Florence Louis, Royal Free; L. P. McBrien, St. Thomas's; D. J. MacMyn, King's Coll.; R. L. Midgley, Univ. Coll.; Mary M. Moller, Royal Free; J. K. Moore, Guy's; C. S. Morgan, St. Thomas's; O. N. Morris, King's Coll.; Gertrude M. Nicholson, Durham; H. G. Nimbalker and A. B. Nutt, Sheffield; D. E. Oakley, St. Bart.'s; Ethel E. M. Ogilvie, Royal Free; Greta K. Olsson, Westminster; Gwendoline D. Orlebar, Charing Cross; R. L. Osmaston, Univ. Coll.; M. N. Patel, London; N. F. Pearson, King's Coll.; A. P. Peeney, Manchester; E. U. H. Pentreath, St. Bart.'s; G. C. Pether, Middlesex; Aileen M. S. Pollock and Monica M. M. Power, St. Mary's; J. C. Preston, Manchester; W. P. Purvis, St. Thomas's; A. Rabinowitz, Guy's; L. J. Rae, London; J. S. Rake, Guy's; Marion Ravell, Royal Free; Dorothy K. Reynolds, King's Coll.; Enid H. Rockstro, Univ. Coll.; Pattie E. Rose, St. Mary's; P. H. Row, Madras and London; H. Royle, St. Bart.'s; R. Saran, Calcutta; H. R. D. Schofield, St. Mary's; I. Schoub, London; W. H. Scriven and Doris G. Sharvelle, King's Coll.; M. Shlosberg, Manchester; E. J. Silverman and E. Sladen, Middlesex; F. C. Smith, London; S. B. S. Smith, St. Bart.'s; P. D. B. Spence, Guy's; J. F. Stent, St. Thomas's; D. D. Stidston, St. Mary's; D. W. Stuart, King's Coll.; B. M. Sundaravadanan, Madras; C. B. V. Tait, St. Bart.'s; Olive M. Thomas, Royal Free; R. G. Thomas, St. Thomas's; Doris H. Tomes, Westminster; H. D. Tonking, St. Thomas's; Sybil E. Tremellen, King's Coll.; F. L. H. Voller, St. Thomas's; M. R. Wadia, Bombay; C. W. Walker, St. Thomas's; J. Walker, Leeds; G. A. B. Walters, St. Thomas's; Nora W. Wamsley, Charing Cross; W. G. H. Warner, St. Mary's; J. Wasserstein, London; Maeve Whelen, Royal Free; Edith V. E. Whidborne, King's Coll.; G. D. D. Wijesekere, Ceylon; W. D. Williams, London; H. M. Willoughby, St. Bart.'s; C. G. Windsor, St. Thomas's; Dorothy L. Woodroff, King's Coll.; C. E. Woodrow, St. Bart.'s; E. C. Wynne-Edwards, St. Thomas's; and Margaret I. Yeatman, Charing Cross.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting of the College was held on Nov. 2nd, Dr. George M. Robertson, the President, in the chair. Dr. Leybourne Stanley Patrick Davidson and Dr. William Edward Foggie took their seats as Fellows of the College. Dr. Ronald Gray Gordon, Dr. James Richan Drever, Dr. Alan Leonard Smith Tuke, and Dr. John Farquhar Christie were elected Fellows of the College. The Hill Pattison-Struthers Bursaries in anatomy and physiology and in clinical medicine were awarded to Hamish Gordon Somerville and Henry Boyd Martin respectively. The Wood Bursary was awarded to Joseph Peter Collie. The Licence of David William Anderson, which had been suspended on May 5th, 1925, was restored. At an extraordinary meeting of the College, held on the same date, the Licences of Edalji Jamshedji Treasuryvala and Kaikhushru Edalji Master were suspended sine die.

UNIVERSITY OF LONDON.—The University Medal in Branch VI. (Tropical Medicine) of the M.D. Examination, July, 1926, has been awarded to Richard Murchison Morris, of the London Hospital and the London School of Tropical Medicine.

University of London Lectures.—A course of two (advanced) lectures on Colour Vision will be given at University College, Gower-street, W.C. 1, by Prof. H. E. Roaf, at 5 P.M. on Wednesdays, Dec. 1st and 8th.—The Semon Lecture, 1926, entitled Nervous Affections of the Œsophagus, will be given in the lecture hall of the Royal Society of Medicine, 1, Wimpole-street, W., by Dr. A. Brown Kelly, at 5 P.M., on Thursday, Dec. 2nd.—A course of five lectures on the Influence of Environment on Bacteria will be given by Dr. F. W. Twort, superintendent of the Brown Institution, in the theatre of the Royal College of Surgeons, Lincoln's Inn-fields, W.C., at 4 P.M. on Monday and Tuesday, Dec. 6th and 7th, Thursday, Dec. 9th, and Monday and Tuesday, Dec. 13th and 14th. Admission to all these lectures will be free, without ticket.

ROYAL SANITARY INSTITUTE.—A sessional meeting is to be held on Saturday, Nov. 20th, in the Town Hall, Colchester, at 11 A.M., when there will be discussions on Rheumatism in School Children (Dr. R. H. Vercoe) and the Plan and Design of a Public Elementary School (Mr. E. S. Miles). Dr. Charles Porter will preside.

OPHTHALMOLOGICAL SOCIETY.—The annual congress of the Ophthalmological Society of the United Kingdom will be held at Liverpool from April 28th to 30th.

PEOPLE'S LEAGUE OF HEALTH.—Dr. Neill Hobhouse will lecture on Association of Ideas, Recognition, and Memory on Monday, Nov. 15th, at 6 P.M. at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1.

CENTENARY OF LAËNNEC.—The French Ambassador has informed H.M. Government that the centenary of Laënnec will be celebrated in Paris from Dec. 13th to 15th, and that Prof. Chauffard, of the Academy of Medicine at Paris, is in charge of the arrangements.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The remaining lectures of the course on Problems of Personal and Public Health will be given at the Institute, 37, Russell-square, London, W.C., on Wednesdays at 4 P.M. as follows: Nov. 17th, Dr. R. H. Miller, the Problem of Rheumatism and Rheumatic Heart Disease in Children; Nov. 24th, Dr. C. W. Saleeby, From Heliotherapy to Heliohygiene; Dec. 1st, Dr. P. C. Varrier-Jones, Settlements for Tuberculous Workers; Dec. 8th, Lieut.-Colonel F. E. Fremantle, the Rôle of Parliament in Regard to Health Legislation.—The Harben lectures will be delivered in the lecture theatre of the Institute by Prof. W. W. C. Topley on Quantitative Experiments in the Study of Infection and Resistance, on Nov. 15th, 18th, and 22nd, at 4 P.M. No tickets of admission are required.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Thursday, Nov. 18th, at 5 P.M., Mr. Zachary Cope will lecture on Acute Intestinal Obstruction at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. On Friday, Nov. 19th, at 1 P.M., Mr. Charles Goulden will give a clinical demonstration in ophthalmology at the Royal London Ophthalmic Hospital. On the same date, at 2 P.M., Mr. Clifford Morson will give a demonstration in surgery at St. Peter's Hospital. The lecture and demonstrations will be open to the medical profession without fee. From Nov. 15th to Dec. 4th the Royal Waterloo Hospital will hold a course in medicine, surgery, and gynæcology, for which the fee will be three guineas. From the same date St. John's Hospital will hold a four weeks' course in dermatology; there will be clinical instruction and two lectures a week, and a series of practical demonstrations in pathology will be arranged. The staff of St. Mark's Hospital is undertaking a comprehensive course in Diseases of the Rectum from Nov. 22nd for one week. From Nov. 22nd and continuing for four weeks there will be a late afternoon course in neurology at the West End Hospital, 73, Welbeck-street, London. The London Temperance Hospital is holding a general practitioners' course (4.30–6 P.M.) from Nov. 29th to Dec. 11th. Courses in obstetrics can now be provided for at the Queen Charlotte's Hospital and the City of London Maternity Hospital. Practical courses in anæsthetics can also be arranged. Personal applications may now be made to the Fellowship of Medicine for the position of clinical assistant at the Samaritan Hospital for Women. Copies of all syllabuses, the General Course Programme, and of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship of Medicine.

ABERDEEN UNIVERSITY CLUB, LONDON.—The seventy-sixth half-yearly dinner will be held at Kettner's Restaurant, 29, Church-street, Shaftesbury-avenue, W. 1, on Thursday, Nov. 25th, at 7 for 7.30 P.M. Prof. W. Bulloch, F.R.S., will take the chair. Those who wish to attend should advise Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, before Nov. 20th, who will be pleased to hear from any graduate of the University. The price of the ticket is 10s.

GLASGOW UNIVERSITY CLUB, LONDON.—This club will dine at the Trocadero Restaurant, Piccadilly, on Friday, Dec. 3rd, at 7.15 for 7.30 P.M. The chair will be taken by the Lord Rector (Sir Austen Chamberlain), and amongst the guests will be the Lord Chief Justice. Any Glasgow University men who, though not members of the club, desire to be present are requested to write to the Hon. Secretaries, 62, Harley House, N.W. 1.

KING'S COLLEGE HOSPITAL WAR MEMORIAL.—The Dean of King's College, the Rev. W. B. Matthews, D.D., last week dedicated two mural tablets to members of the staff who lost their lives in the war. The tablets, designed by Mr. W. A. Pite, the hospital architect, are on the west wall of the chapel and bear the names of 25 students, five nursing sisters, two men of the works department, and two porters.

VIENNA MEDICAL SCHOOL.—The syllabus of special medical courses arranged by the University of Vienna for the session 1926–27 has just been issued, and includes all the usual subjects. Persons attending these courses are exempted from the necessity of having their passports vised for Austria, provided they can produce a card of enrolment. All further information can be obtained from the Secretary, the Medical Courses, Schloesselgasse 22, Vienna 8.

CLOSING OF HARROGATE ROYAL BATH HOSPITAL.—This institution was closed last week on account of the difficulty of obtaining supplies of fuel adequate for the balneological treatment and the comfort of the patients, who have left. The waiting-list contains more than 100 names. It is hoped to reopen the hospital early in the New Year.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, Cavendish-square, London, W., on Thursday, Dec. 2nd at 8.30 P.M., when a paper will be read by Prof. Harvey Littlejohn and Dr. Douglas Kerr, entitled Monoxide Poisoning: Its Increasing Medico-Legal Importance. A discussion will follow.—The society's annual dinner will be held at the Holborn Restaurant, London, W.C. 1, on Friday, Dec. 10th, at 7 for 7.15 P.M., when the President, the Right Hon. Lord Justice Atkin, will be in the chair. The members of the society are asked to communicate intention to be present and the number of guests they may bring to Mr. Ernest Goddard, hon. secretary of the society, 3, South-square, Gray's Inn, W.C. The price of the dinner is 14s. 6d., exclusive of wines.

CHILDREN'S HOSPITALS.—During the last week or two there has been remarkable activity in relation to the provision of hospital accommodation for sick children. Last week Princess Mary opened the Infants' Convalescent Home at Burnham, Bucks, which has been built as an offshoot of the Infants Hospital, Vincent-square, Westminster, of which she is President. Mr. Gomer Berry has defrayed the cost (£2700) of the freehold.—On Nov. 2nd Princess Louise, Duchess of Argyll, laid the foundation-stone of the Princess Louise Hospital for Children in North Kensington. This is a re-establishment of the Kensington Dispensary and Children's Hospital and will serve a population of nearly 100,000 in a district where there is no provision for sick children. It will accommodate about 50 in-patients and will include a dispensary for women.—The foundation-stone has also been laid of the new Royal Aberdeen Hospital for Sick Children, which is to be erected on a site of 16 acres at Forresterhill at a cost of £110,000. There are only three hospitals for sick children in Scotland, the other two being in Edinburgh and Glasgow. Prof. Matthew Hay states that this will be the best institution of its kind in the Kingdom.—Last week also there was opened a remodelled out-patient department at the Fleming Memorial Hospital for Children at Moor Edge, Newcastle-upon-Tyne.—Sir Claude Hill, Governor of the Isle of Man, has opened the "Sarah Jane Osborne Children's Ward" which has been added to Ramsey Cottage Hospital.—The Queen's Hospital for Children, Hackney-road, is in such serious financial difficulties that, unless a large sum of money is raised quickly, at least one half of the wards will have to be closed at the end of the year. Its 170 beds have long been insufficient and an appeal for £20,000 is being made.

THE Deputy Secretary to the Ministry of Health, Mr. E. R. Forber, C.B., C.B.E., has appointed Mr. D. C. L. Ward to be his private secretary.

EUGENICS SOCIETY.—Sir Bruce Bruce-Porter will preside at a meeting of this Society to be held at the London Day Training College, Southampton-row, W.C., on Wednesday, Nov. 17th, at 8 P.M., when the subjects of Mental and Physical Degeneration and Differential Birth-rate will be discussed.

SHROPSHIRE AND WALES EYE, EAR, AND THROAT HOSPITAL.—A new wing of this hospital was opened by Princess Mary last Saturday; it is named after her. There is no institution of the kind between Shrewsbury and the sea on the west; patients are received from as far away as Swansea and Aberystwyth, and its enlargement had become imperative.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—A quarterly meeting of this Association will be held on Tuesday, Nov. 16th, at the Horton Mental Hospital, Epsom, which will be open to inspection all day; other institutions in the neighbourhood may also be visited. The meeting will be held at 2 P.M., after luncheon, and at 3 P.M. Dr. P. K. McCowan and Dr. J. S. Harris will give a paper and clinical demonstration on Chronic Epidemic Encephalitis. As already announced, a special meeting of the Association will be held on Monday, Nov. 15th, at 4 P.M., in the house of the B.M.A., Tavistock-square, London, when Dr. Alfred Adler (Vienna) will give an address on the Cause and Prevention of Neurosis. Members and their friends are cordially invited.

DONATIONS AND BEQUESTS.—Sir Samuel Butler Provis, Whitehall-court, S.W., left £1000 to Queen's College, Cambridge, and £500 to the Chelsea Hospital for Women.—Mr. and Mrs. W. J. Courtauld, of Halstead, Essex, have given £1000 to endow a bed at Chelmsford Hospital.—Mr. Fred Needler, of Hull, has made a donation of £1000 to the Lord Mayor's Hospital Sunday Fund to commemorate the visit of the Prince of Wales to his firm's works.—The King has sent £500 to the West Norfolk and Lynn Hospital, the money being allocated from the admission fees to Sandringham grounds during the summer.—Mr. John Bullough, Over Hulton, Atherton, Lancs, besides other bequests, gave £500 to the Leigh Infirmary, the Mary Bullough Memorial Institute, £200 each to the Atherton Sick Nursing Association and the Atherton Guild of Help, and £2000 to his nurse.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Opening of Autumn Session.

PARLIAMENT reassembled on Tuesday, Nov. 9th, for the autumn session.

Business Before Christmas.

Replying to Mr. CLYNES, Mr. BALDWIN (Prime Minister), said that among the Bills which the Government hoped to pass before the prorogation were the following: The Housing of Rural Workers Bill, the Mental Deficiency Bill, the Prisons (Scotland) Bill, the London University Bill, the Legitimacy Bill, the Lead Paint Poisoning Bill, the Local Authorities Bill, the Smoke Abatement Bill, the Coroners Amendment Bill, and the Births and Deaths Registration Bill. It was not proposed to proceed with the Factories (No. 2) Bill this session.

HOUSE OF LORDS.

TUESDAY, NOV. 9TH.

Protection for Juveniles.

Viscount ASTOR asked in what measures the Government proposed to give the protection promised on May 18th, 1926, to juveniles between the ages of 14 and 18 engaged in occupations at present unregulated by statute.

The EARL OF PLYMOUTH (Captain Gentleman-at-Arms) said that the new Factories Bill did not include the juveniles referred to. He did not think it could be so amended as to include them. He regretted that he could not give a very definite answer to Lord Astor's question, but the Government had not yet taken a decision on the matter. Nor had Parliament yet taken a decision on the Factories Bill, and the Government, while they had every sympathy with, and wished to improve the lot of, juveniles engaged in unregulated employment, felt that it would be premature to introduce legislation on that matter until the question of the conditions and hours of labour of young persons employed in factories had been settled.

HOUSE OF COMMONS.

TUESDAY, NOV. 9TH.

Pensioners and Hospital Treatment.

Sir CHARLES CAYZER asked the Minister of Pensions how many ex-Service men whose malady was admitted to be attributable to, or aggravated by, war service, were awaiting sanatorium or hospital treatment at the present time; if there was any accumulation of such waiting cases; and when his department expected to be able to deal with them.—Lieut.-Colonel G. F. STANLEY replied: The number of ex-Service men awaiting admission to sanatoria or hospitals was, at the end of September last (the latest date for which figures are available), 328. This number is well within the average weekly number of admissions to Ministry hospitals alone, and I am satisfied that there is no accumulation of cases awaiting treatment.

Medical Inspection of Dairy Farms.

Sir CHARLES CAYZER asked the Minister of Agriculture whether he was aware of the campaign now being promoted in many urban districts with the object of authorising all medical officers in any district to which milk was supplied to inspect the farm or farms from which such supplies originated; what was the attitude of his department on the matter; and whether he was aware of the objections from every standpoint of the dairying interest to such policy.—Sir KINGSLEY WOOD replied: My right hon. friend has received copies of resolutions passed by a number of urban authorities in the sense indicated by my hon. friend. My right hon. friend is aware of the objections of the dairying interest to the policy recommended in these resolutions, and he does not at present contemplate the introduction of legislation to amend the Milk and Dairies (Consolidation) Act, 1915, which now governs this matter.

Poor-law Statistics and Coal Disputes.

Mr. HERBERT WILLIAMS asked the Minister of Health whether he could give comparative statistics of the numbers of persons in receipt of Poor-law relief, and of the cost of such relief as a result of the disputes in the coal-mining industry which took place in the years 1893, 1898, 1921, and 1926.—Sir KINGSLEY WOOD, Parliamentary Secretary to the Ministry of Health, replied: It is estimated that in the course of the four disputes mentioned the following increases occurred in the number of persons in receipt of domiciliary relief and in the cost of such relief. It is impossible to state definitely that these increases were entirely due to the disputes or that they indicate the whole effect of the disputes upon pauperism.

(1) *Increase in Numbers.*

Period covered by dispute.	Maximum increase in numbers of persons in receipt of domiciliary relief in areas directly affected by the dispute.		Net increase in numbers of persons in receipt of domiciliary relief in England and Wales at the same date.	
	Number.	Percentage.	Number.	Percentage.
1893 (June to November)	2,270	11	25,489	5
1898 (end April to July)	43,751	155	32,200	6
1921 (April 1st to July 1st)	464,683	373	647,500	144
1926 (May 1st to date)*	1,162,592	337	1,266,095	126

* This estimate covers period ended Oct. 30th, 1926.

(2) *Increase in Cost of Relief.*—Records showing the cost of relief during the period of the earlier disputes are not available, but it is estimated that during the dispute in 1921 the cost of outdoor relief in money and kind in the areas directly affected increased by at least £850,000. As compared with the rate of expenditure in April, 1926, the cost of outdoor relief in money and kind was greater during the period from the beginning of May, 1926, to the end of October, 1926, by approximately £8,800,000 in the areas directly affected by the dispute.

Imported Machine-Skimmed Condensed Milk.

Mr. RYE asked the Minister of Health whether he was aware that machine-skimmed condensed milk, lacking in nutritive quality, was being imported into Great Britain in increased quantities; and, what steps, if any, he would take to ensure that such imported milk was not sold for infant consumption.—Sir KINGSLEY WOOD replied: My right hon. friend is aware that the imports of condensed machine-skimmed milk are increasing. The Condensed Milk Regulations require that every tin containing this article shall be labelled with the words "machine-skimmed" and "unfit for babies." He does not think that it is practicable to take any further steps to ensure that this article is not sold for infant consumption.

Farmers' Families and the Milk and Dairies Order.

Lieut.-Colonel ACLAND-TROYTE asked the Minister of Health whether he would take steps to exempt from the Milk and Dairies Order farmers who sold milk only to their own farm workers and their families.—Sir KINGSLEY WOOD replied: As at present advised my right hon. friend sees no reason for exempting from the requirements of the Order farmers who sell milk only to farm workers and their families. There seems no reason why such persons should not have the same protection as is accorded to the rest of the community by the Milk and Dairies Order.

The Sale of Impure Flour.

Mr. FORREST asked the President of the Board of Trade whether his attention had been drawn to the allegations regarding the impurity of the flour sold to the general public; and what, if any, steps he was taking or had taken in this matter.—Mr. NEVILLE CHAMBERLAIN replied: I am aware that it is a common practice to add certain chemical substances to flour with the object of modifying its baking properties. The question whether such additions are objectionable on grounds of health and what restrictions, if any, should be placed on them in the interest of the public health has been referred to a Departmental Committee for consideration and report.

Study Facilities for Indian Members of the I.M.S.

Colonel DAY asked the Under Secretary of State for India whether the claims of the Indian members of the Indian medical service, so far as they related to facilities for study, had received further consideration, and with what result.—Earl WINTERTON replied: My noble friend has recently sanctioned a scheme of which one of the objects is to provide certain passage facilities for Indian officers of the Indian medical service who desire to avail themselves of study leave in this country. I hope that particulars will be announced shortly.

Grant to University of London.

Sir W. DAVISON asked the Chancellor of the Exchequer whether any, and if so what, grant from public funds had recently been promised to the University of London; in what circumstances had such grant been promised; and what conditions had been attached to the same.—Mr. CHURCHILL, Chancellor of the Exchequer, replied: I promised in June last on behalf of His Majesty's Government, that we would be prepared within certain financial limits to ask Parliament to make provision for improved accommodation of the University, subject to approval by the Treasury of plans to be formulated by the Senate.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Nov. 18th.—4 P.M., Meeting to receive Report of Council. 4.30 P.M., *Papers to be read:* W. S. Patton and E. Hindle: Reports from the Royal Society's Kala-Azar Commission in China, Nos. 1–5 (communicated by Dr. H. H. Dale). Major Patton will review the work done and in progress by the Commission in China. *Papers to be read in title only:* R. Hill: The Chemical Nature of Hæmochromogen and its Carbon Monoxide Compound (communicated by Sir Frederick Hopkins). H. Gremels and R. Bodo: The Excretion of Uric Acid by the Kidney (communicated by Prof. E. H. Starling). C. H. Browning, J. B. Cohen, S. Ellingworth, and R. Gulbransen: The Antiseptic Properties of the Amino Derivatives of Styryl and Anil Quinoline. T. S. P. Strangeways and F. L. Hopwood: The Effects of X Rays upon Mitotic Cell Division in Tissue Cultures in vitro (communicated by Sir William Hardy). Sir Charles Sherrington and R. S. Creed: Observations on Concurrent Contraction of Flexor Muscles in the Flexion Reflex. S. B. Schryver and H. W. Buston: The Isolation of Some Hitherto Undescribed Products of Hydrolysis of Proteins. Part III. (communicated by Prof. V. H. Blackman). J. A. Crowther: The Action of X Rays on *Colpidium colpoda* (communicated by Sir William Hardy).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 16th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8.30 P.M., PATHOLOGY. Papers: Dr. J. A. Murray: Delayed Successful Autoplasty of Carcinoma. Dr. J. G. Greenfield: Adanmantinoma of the Hypophysis

Cerebri. Dr. Aldo Castellani: (1) Notes on Some Little-known Intestinal Bacteria. (2) Further Observations on Certain Phenomena of Probable Symbiotic Origin.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Papers: Prof. William Wright: Mediæval Conception of the Anatomy and Physiology of the Central Nervous System. Dr. Arthur Davies: A Montpellier Diploma.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) ANNUAL DINNER OF THE SOCIETY: Hotel Victoria, 7.30 for 8 P.M.

FRIDAY.—8 P.M., OBSTETRICS AND GYNÆCOLOGY. Cases: Prof. Henry Briggs: Pregnancy and Ascites. Prof. Beckwith Whitehouse: Secondary Ovarian Carcinoma Treated by Transfusion of Maternal Blood and Injections of Radiated Ascitic Fluid. Paper: Prof. Louise McIlroy and Dr. Alfreda Baker: The Causes and Prevention of Antenatal, Intranatal, and Neonatal Death. 8.30 P.M., ELECTRO-THERAPEUTICS. Paper: Dr. Walter J. Turrell: The Physio-Chemical Action of Interrupted Currents in Relation to Their Therapeutic Effects.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Owing to illness, Prof. Mühlens is unable to give his paper on Plasmoquine. In consequence of this, the Laboratory Meeting will be held at the London School of Hygiene and Tropical Medicine on Thursday, Nov. 18th, the chair to be taken at 8.15 P.M. The following, amongst others, will give demonstrations: Dr. H. B. Newham, Dr. P. H. Manson-Bahr, Dr. C. M. Wenyon, Dr. H. H. Scott, Dr. J. G. Thomson, Dr. P. A. Buxton, Dr. J. W. A. Cameron, Dr. Aldo Castellani, Dr. C. A. Hoare, Dr. A. C. Stevenson, and Dr. H. M. Shelley.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

FRIDAY, Nov. 19th.—5 P.M., The Very Rev. Dean Inge: Racial Degeneration. (David Lloyd Roberts Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 15th, to SATURDAY, Nov. 20th.—FELLOWSHIP OF MEDICINE. Special lecture at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. Thurs., 5 P.M., Mr. V. Z. Cope: Acute Intestinal Obstruction. Free to members of the medical profession.—ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C. Fri., 1 P.M., Mr. Goulden: Clinical Demonstration. Free to members of the medical profession.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Fri., 2 P.M., Mr. Clifford Morson: Clinical Demonstration. Free to members of the medical profession.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special course in Medicine, Surgery, and Gynæcology.—ST. JOHN'S HOSPITAL, Leicester-square. Special course in Dermatology. Practical demonstration in pathology if desired.—LONDON LOCK HOSPITAL, Dean-street. Clinical course in Venereal Diseases. Instruction in the Out-patient Department. Further information from the Secretary of the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Nov. 15th.—2 P.M., Medical Cases in the Wards. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical Skin and Eye Clinics. Operations.

THURSDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Wednesday, Nov. 17th, and Friday, Nov. 19th, at 2.30 P.M., there will be special demonstrations of Dermatological and Medical Cases by Dr. W. Jenkins Oliver and Dr. L. R. Yealland respectively.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, Nov. 15th.—11 A.M., Mr. Tyrrell Gray: Surgical Wards. 12 noon, Mr. Simmonds: Fractures and Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

WEDNESDAY.—10.30 A.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. 2 P.M., Mr. Gibb: Eye Dept.

THURSDAY.—11 A.M., Resident Assistant Surgeon: Surgical Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Donald Armour: Operations.

FRIDAY.—10 A.M., Sir Henry Simson: Gynæcological Operations. 12.15 P.M., Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10. A.M, Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Throat, Nose, and Ear Operations.

Daily, 10 A.M., to 5 P.M. Operations, Medical, Surgical, and Special Out-patients Departments, Operations. Saturday, 10 A.M. to 1 P.M.

UNIVERSITY COLLEGE, Gower-street, W.C.

WEDNESDAY, Nov. 10th.—5 P.M., Dr. C. H. Best: Insulin. (Second of four advanced lectures in Physiology.)

POST-GRADUATE HOSTEL, Imperial Hotel, Russell-square, W.C.

TUESDAY, Nov. 16th.—9 P.M., Prof. C. A. Pannett: Treatment of Gastric and Duodenal Ulcers.

FRIDAY.—9 P.M., Dr. Maule Horne: The Practitioner and the Public Health Man.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 16th.—5 P.M., Dr. A. Whitfield: Diseases Due to Fungi (1).

THURSDAY.—6 P.M., Dr. J. T. Ingram: Pathology Demonstrations.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.

THURSDAY, Nov. 18th.—4 P.M., Dr. Poynton: Some Inspiring Cases of Rheumatism.

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W.C.

MONDAY, Nov. 15th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Mr. Williamson-Noble: Optic Atrophy.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M. Mr. Armour: Head Injuries.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cerebral Disturbances of Vision.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Perkins: The Treatment of Poliomyelitis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 19th.—4 P.M., Mr. Armour Brown: Nasal Obstruction.

CHADWICK PUBLIC LECTURES.

MONDAY, Nov. 15th.—5.15 P.M. (in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street, W.), Prof. H. J. Fleure: Racial Characters of the Human Skin and Racial Types in Relation to Health. (Malcolm Morris Memorial Lecture.)

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Nov. 17th.—4 P.M., Dr. R. H. Miller: The Problem of Rheumatism and Rheumatic Heart Disease in Children.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSES

TUESDAY, Nov. 16th.—4.15 P.M., Dr. A. Ramsbottom: Malignant Disease of the Lungs.

FRIDAY.—4.15 P.M., Mr. A. H. Burgess: Cancer of the Gastro-Intestinal Tract.

ST. MARGARET'S HOSPITAL FOR WOMEN, Acomb-street, Whitworth Park, Manchester.

WEDNESDAY, Nov. 17th.—4 P.M., Mr. A. C. Magian; The Use of X Rays in the Diagnosis of Pregnancy.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Nov. 19th.—3.30 P.M., at the Royal Infirmary: Mr. Kerr: Chronic Diseases of the Maxillary Antrum.

ANCOATS HOSPITAL POST-GRADUATE COURSE.

THURSDAY, Nov. 18th.—4.15 P.M., Mr. F. Holt Diggle: Tonsillectomy.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

TUESDAY, Nov. 16th.—4 P.M., Dr. Hector Charles Cameron: Some Forms of Acidosis in Children. Discussion to be opened by Dr. J. H. P. Paton.

Appointments.

BEDFORD, DAVIS EVAN, M.D. Lond., M.R.C.P. Lond., has been appointed Assistant Physician to the Middlesex Hospital, London.

COLVILLE, E. T., M.B., B.S. Durh., D.P.H., Medical Officer for the Ashington Urban area.

HERINGTON, C., M.B., B.S. Lond., D.P.H., Medical Officer of Health for Ilkeston.

Liverpool Heart Hospital: PAUL, F. T., F.R.C.S. Eng., Honorary Consulting Surgeon: BICKERTON, T. H., M.R.C.S., Honorary Consulting Ophthalmic Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: RICHARDSON, J. C. R., M.B., Ch.B. Camb. (Witham, Essex); STEVENS, A. L. B., M.B., B.Ch. Oxf. (Thames District, Oxford); and SKELTON, J. B. G., L.R.C.P. Lond., M.R.C.S., D.P.H. (Gosport, Southampton).

Vacancies.

For further information refer to the advertisement columns.

Accrington, Victoria Hospital.—H.S. £150.

Admiralty.—Dental Surgeons for the Royal Navy.

Birmingham and Midland Homœopathic Hospital and Dispensary.—H.S. £150.

Brighton County Borough Mental Hospital, Hayward's Heath.—Second Asst. M.O. £300.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. At rate of £150.
Cancer Hospital, Fulham-road, S.W.—Jun. Radiologist. £500.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
Charing Cross Hospital, W.C.—Res. M.O. £400. Res. Anæsthetist. At rate of £100. Also Asst. P.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
Chorley Hospital.—H.S. At rate of £150.
Downs Hospital for Children, Sutton, Surrey.—Asst. M.O. £500.
Dublin, Royal City Hospital.—Visiting Surgeon.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P. Obstet. Asst. and two H.S.'s. Each at rate of £50. Also Clin. Assts.
Evelina Hospital for Children, Southwark, S.E.—H.S. £120.
Federated Malay States Medical Dept.—Radiologist. £700.
Hastings, Royal East Sussex Hospital.—Hon. Asst. S.
Hereford, Herefordshire General Hospital.—Hon. S. to Ear, Nose and Throat Dept.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £50.
Ipswich, Heathfields Infirmary, &c.—Asst. Res. M.O. £250.
L.C.C. Mental Hospital.—Eighth Asst. M.O. £423.
Leicester Royal Infirmary.—Hon. Radiologist.
London, Female Lock Hospital, 283, Harrow-road, W.—Hon. Obstet. S.
Lucknow University.—Prof. of Anatomy. Rs.1450 per mensem.
Manchester, Baguley Sanatorium.—Asst. M.O. £350.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Two H.S.'s. At rate of £200.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Asst. P. and two Asst. S.'s.
National Hospital, Queen's-square, W.C.—Res. M.O. £200.
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120.
Oxford, Radcliffe Infirmary and County Hospital.—Hon. Asst. S. and Hon. Asst. Phys. to Electro-Therapeutic Dept.
Plymouth, South Devon and East Cornwall Hospital.—Hon. Asst. P.
Portsmouth, St. Mary's Infirmary, &c.—Third Asst. Res. M.O. £250.
Prescot Union Institution, Whiston.—Hon. Res. Asst. M.O. £300.
Royal College of Surgeons of England.—Election to Court of Examiners. Also Election of Examiner in Dental Surgery.
Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Med. and Gynæcological Regs. Each £100. Also H.S.'s., H.P., &c., £100 each.
St. Thomas's Hospital.—M.O. in Charge of Electro-Therapeutic Dept.
Shanghai Municipal Council, Public Health Dept.—Asst. Pathologist. Tls.600 per mensem.
Shrewsbury, Salop Mental Hospital.—Senior Asst. M.O. £500.
South Uist Parish and Northern Division.—M.O. and Pub. Vaccinator. £620.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.P. £150.
Truro, Royal Cornwall Infirmary.—H.S. £170.
West London Hospital, Hammersmith, W.—Phys. Also H.S., H.P., Res. Asst., Cas. O. and Aural and Ophth. H.S. Each at rate of £100.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Chichester, Sussex; Littlebourne, Kent and Penicuik, Edinburgh.

Births, Marriages, and Deaths.

BIRTHS.

BATTEN.—On Oct. 30th, at Lyndhurst-road, Hampstead, the wife of Lindsey W. Batten, M.B., M.R.C.P., of a daughter.

DEATHS.

BRABANT.—On Nov. 3rd, at The Cottage Hospital, East Cowes, after a long illness, Thomas Hughes Brabant, M.R.C.S., L.R.C.P., aged 77.

CAIRD.—On Nov. 1st, at Edinburgh, suddenly, Francis Mitchell Caird, M.B., C.M., F.R.C.S.E., LL.D., of Royal-terrace, Emeritus Professor of the Regius Chair of Clinical Surgery, Edinburgh University.

GIRLING.—On Oct. 31st, at Southend-on-Sea, John Girling, M.D. Brussels, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A. Lond., and late of the London Hospital, aged 64.

LANE.—On Nov. 4th at the Star and Garter Home, Richmond, after a long illness, patiently borne, James Ernest Lane, F.R.C.S., late Surgeon to St. Mary's Hospital and the Lock Hospital, London, aged 69.

LUCAS.—On Nov. 6th, at The Vinery, Bury St. Edmund's, Robert Harry Lucas, M.R.C.S., L.R.C.P.

SMITH.—On All Saints' Day, at Lower Clapton-road, Roland Smith, M.R.C.S., L.S.A., J.P., in his 76th year.

STUART.—On Nov. 1st (suddenly), at his residence, "Carneal," Knebworth, Herts, Robert Charles Stuart, M.B., B.Ch., J.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Notes, Comments, and Abstracts.

CARE OF THE FEEBLE-MINDED.

THE sixty-seventh annual report of the Royal Eastern Counties' Institution for the Mentally Defective, Colchester, contains much interesting information. The institution is supported by voluntary contributions and by the payments of patients, and is certified by the Board of Education, the Board of Control, and the Home Office. The main building is at Colchester, and adjoining it are schools and workshops, presented by the late Lord Peckover, a large farm, and separate blocks for the lower grade classes. In addition there is a special residential school for high-grade girls (Greenwood School, Halstead), similar schools for boys (East Hill House and Hillsleigh, Colchester), a special home for young women (Lexden House, Colchester), a home for five classes of adult men (Bridge Home, Witham), and the seaside home (Crossley House, Clacton-on-Sea), presented by Lord Somerleyton. The total accommodation is for 1070 patients and extensions are in contemplation to be paid for by the county councils of Essex, East and West Suffolk, and Cambridgeshire. The number under care on Jan. 1st last was 1081.

Many useful trades are successfully taught at the Peckover schools with the object of making the inmates as self-supporting as possible. All the furniture required and all the clothing—including dresses, suits, and boots—are made at the institution; large numbers of mats, brushes, baskets, and articles of wood-carving are also manufactured, and it is stated that orders can always be carried out. Some of the girls are employed in the laundry and both boys and girls are taught farm and garden work. Many other kinds of manual work are taught in the schools and useful leather and other bags and raffia baskets are made. The ability and enthusiasm with which the institution is carried on are evident and the report from a Commissioner of the Board of Control is highly favourable.

The medical superintendent, Dr. F. Douglas Turner, in his scheme for dealing with mental deficiency, favours a central institution as a sorting house, some patients being kept for training, some, of low grade, being sent to institutions of simpler type, whilst some high-grade cases, after training, pass under guardianship. In specially favourable circumstances these are allowed to go out on leave; others are retained in hostels, but sent out to work by day. Daily work is the ideal, but practical difficulties limit its application. He also gives many powerful arguments against sterilisation. During an investigation of 318 cases among the general population he found that in only 15 was a parent or a grandparent feeble-minded, and he quotes Dr. R. D. Clarkson as stating, in the Morison lectures for this year, that he had been able to discover only 6 out of 3500 cases in which the parents of mentally defective children had themselves been certified or certifiable as feeble-minded. These figures are in very sharp contrast with those commonly accepted, and Dr. Turner gives fully his reasons for believing them to be a truer estimate. The defectives who have children, he points out, are mostly high grade or borderline cases, and to enforce their sterilisation would be to throw a great onus on the medical profession with the chance of a very small and problematical gain.

The Movement in Scotland.

In connexion with Dr. Turner's report, it is interesting to note that in Scotland the movement for the better care and appropriate education of the feeble-minded is steadily gaining ground. In a recent address at the opening of extensions at the Special School at Balfour-place, Edinburgh, Mr. W. W. McKenzie, senior assistant secretary to the Scottish Education Department, said that the day of special classes in schools was over, and that the day for the policy of concentration had come. A movement being made by the Scottish Women Citizens to establish a colony for the permanent care of the feeble-minded is likely to bear fruit very soon. At the Balfour-place Special School training is successfully given in cobbling, woodwork, cookery, spinning, basketry, shirt-making, cardboard modelling, needle craft, and one or two other occupations. It is estimated roughly that, among school-children, feeble-mindedness occurs to the extent of 1 per cent., and for Edinburgh this would mean that the education authority must provide for at least 500 cases. But the difficulties at the early stages are, of course, only a small part of the problem; it is the ages after 16 that give trouble.

THIRTEEN FOREIGN DRUGS.

UNDER Section 10 (5) of the Finance Act, 1926, the Treasury may exempt from the Safeguarding of Industries Act, 1921, any article in respect of which the Board of Trade are satisfied that it is not made in any part of H.M. Dominions

in substantial quantities, and that it is not likely to be made within a reasonable period. Notice has been given by the Board of Trade that this is the case in regard to the following 13 drugs: Amidopyrin, barbitone, cocaine, cocaine hydrochloride, guaiacol carbonate, hydroquinone, methyl sulphonal, oxalic acid, phenacetin, phenazone, piperazine, salol, sulphonal. It is not a little remarkable that none of these important chemicals is made within the Empire and that the teachings of the war have so soon been forgotten on the necessity of maintaining the rudiments of self-preservation. But however ready the medical man may be to help in keeping the British manufacturer going, it is the chemist on whom primarily the onus rests, and nothing will be done until the home chemical industry decides that the production of essential drugs cannot be left to the foreigner.

AN IMPROPER INVITATION.

WE have received from certain physicians the following:—

91, Regent-street, London, W. 1.

DEAR DR. ———

We assume that you are interested in Ultra-Violet Light Therapy, and probably have many clients to whom you prescribe this new form of treatment. We therefore make no apology in drawing your attention to the Institute at the above address, which is near your consulting rooms, and is equipped with the latest types of Ultra-Violet Lamps.

A number of eminent Doctors who cannot afford the time to irradiate patients themselves pass on their clients to us, and we may say that we only treat cases under a doctor's prescription.

Naturally, we realise that you would require some monetary interest in the matter as a quid pro quo for passing your clients on to us, and we suggest offering you one-third of the fees collected from your patients. Our fees range from 7*s.* 6*d.* to £1 1*s.* per treatment, according to the client's status, and the dosage required. We are also prepared to give special rates for a course of treatment, 13 charged as 12.

The procedure which we have in mind is, that you would refer your patients to us with a prescription, marking on the prescription the fee to be charged.

Should you consider the proposition favourably, the writer would be very pleased to call upon you or meet you at 91, Regent-street by appointment to discuss the matter further.

Trusting that we may hear that you desire to co-operate with us in the scheme outlined above.

Yours very truly,
THE PARKER SUNLIGHT INSTITUTE.

The recipients of this circular resent it, and the "eminent Doctors . . . . who . . . . pass on their clients" to the Parker Sunlight Institute may reconsider their policy when they see the suspicion to which it may give rise.

ACTINOTHERAPY AT GLASGOW.

IN our last issue (p. 988) it was erroneously stated that a demonstration of actinotherapy at the Robroyston Hospital was given by Dr. Kathleen Smith. This demonstration was in fact given by Dr. Alexander Smith, resident assistant physician to the hospital, and his remarks on fixation methods applied only to non-pulmonary tuberculosis. The confusion arose because Dr. Kathleen Smith acts at the Cochrane-street clinic, visited earlier in the morning.

MANUAL SELF-TREATMENT FOR CONSTIPATION.

WE cannot approve of the advice offered in a little book [1] designed to help sufferers from constipation to treat themselves. With many of the considerations advanced we can cordially agree—notably that we lack any scientific proof that uncivilised people are not troubled by constipation and that dietetic treatment is not always efficacious in curing it. But to recommend habitual insertion of the patient's unprotected vaselined finger into the rectum in order to clear out fæcal débris and to stimulate intestinal movements is to risk dangers which are even more difficult to combat than obstinate constipation. The reluctance of a medical man to make a rectal examination without a finger-stall is not due to fastidiousness but to the well-known difficulty of cleaning a finger after contamination with fæcal matter. This difficulty is not to be met by the suggestion that "the finger used, as well as both hands, should be carefully washed and scrubbed with hot water and soap, because the risk of accidental infection to self and others is slightly greater than in the ordinary wiping after a motion." The use of a rubber stall certainly diminishes the risk of contamination, but even if occasionally in cases of long-standing constipation a preliminary manual clearance must occasionally be made by the doctor, it need seldom be repeated. Any encouragement to young people to manipulate an erogenous zone must be strongly deprecated. Nowhere in this little pamphlet is any warning given that the practice might lead to the formation of bad habits much harder to cure by drugs, diet, or exercise than is constipation.

[1] Constipation: Instructions for Relieving Suffering by an Easy Method of Manual Self-treatment, by a Qualified British Surgeon. London: John Bale, Sons and Danielsson. 1926. Pp. 14. 2*s.*

MILK PASTEURISATION IN ILLINOIS.

A RECENT issue of the *Illinois Health News* gives a detailed account of work done on the pasteurisation of milk in Illinois during the year 1926. No less than 98 per cent. of all the milk used in cities in the United States having a population of 500,000 or over is pasteurised. In Illinois an estimated average of three-fourths of the milk is pasteurised in cities with a population of 30,000 or over, exclusive of Chicago. In Chicago about 99 per cent. of the milk supply is pasteurised. It is agreed that pasteurisation, if not properly done, may give consumers a false sense of security. Until recently only a very few cities in Illinois attempted to supervise milk plants including pasteurisation plants, and there was practically no inspection or supervision by any State department. The Chicago Health Department has made regular inspections of milk pasteurisation plants since 1916, when steps were taken to enforce the pasteurisation ordinance adopted by the city in 1908; and during the year under review more systematic, thorough, and detailed inspections were started when the sanitary control of the city's milk supply was placed under the immediate charge of engineers and other technical experts. In 1925, in response to a demand by various dairy, health and other public agencies, a law known as the Milk Pasteurisation Plant Law was enacted, the main provisions of which may be summarised as follows:—

(1) Pasteurisation is defined as the process of heating milk or milk products to a temperature of at least 142° F., and holding at such temperature for not less than 30 minutes.

(2) Operators of pasteurisation plants must apply to the State Department of Public Health for a certificate of approval.

(3) The State Department of Public Health shall prepare minimum requirements for the construction, equipment, operation, and maintenance of pasteurisation plants.

(4) Certain provisions are made as to the sanitary quality of the raw milk which is to be pasteurised.

It has been found that the pasteurisation plant owners, with but few exceptions, have proceeded willingly and promptly to make any changes that were found to be necessary in order to comply with the minimum requirements, any owners not so complying being compelled to discontinue operating their pasteurisation equipment and labelling the milk "pasteurised." The minimum requirements are based on present knowledge regarding the subject, and are subject to changes and additions if further study shows the need for the same. Much research has been done to determine the efficiency of various commercial pasteurisers. The most recent research work was probably that which was carried out at Endicott, New York, which included studies of the efficiency of different types of equipment under actual commercial operating conditions, as a result of which several valuable recommendations were made.

Among the more important problems which still call for research and which are now being studied are those connected with: (1) satisfactory devices for recording the actual length of time for which the milk is held at the proper temperature; (2) the question of leaky valves; and (3) foam accumulating on the top of the milk, and splash on the covers which occurs in certain types of pasteurisers. If the splash or foam is not maintained at as high a temperature as the milk it is doubtful whether the entire product is properly pasteurised.

The passage and carrying out of the Milk Pasteurisation Plant Law has already brought about marked improvement in the quality of the milk supply. Since pasteurisation was never intended to be a means for making dirty milk safe, but rather for making a clean milk safer, special attention is called to the minimum requirements in regard to the cleanliness of the raw milk brought to the plants. Enforcement of the Pasteurisation Plant Law is intended to ensure a clean milk, pasteurisation being directed towards destroying any disease-producing organisms which may accidentally be in the raw milk even when all reasonable requirements have been fulfilled at the farms.

THE LATE DR. F. H. CROWDY.—On Oct. 26th Dr. Frederick Hamilton Crowdy died at Highgate at the age of 75. Educated at the University of Edinburgh, he qualified in 1875 and graduated M.D. in 1886. For a time he was acting surgeon to the St. John's Hospital, Newfoundland, but for the last 40 years or more he had been in general practice at Highgate. He was medical officer to the Santa Claus Home for Invalid Children at Highgate, and organised numerous meetings to help in its support.